

Flight Simulator^{WORLD}

June/July 2001

Vol. 8 No. 3

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Also This Issue:

Speakers, Monitors &

3-D Accelerators

Top 5 Essential

Simulation Enhancements

Flying With Satco

Round Robin

UK Commuter Flight



A Quick Look at
Microsoft Train Simulator!



www.flightsimulatorworld.com

MIDWAY



STRAP INTO A *Wildcat* AND YOU'LL DETERMINE

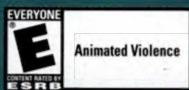
GET BEHIND THE CONTROLS OF ONE OF SEVEN WWII AIRCRAFT, INCLUDING THE F4F-4 WILDCAT, F4U-1A CORSAIR AND A6M ZERO, AND FLY A CAMPAIGN IN THE PACIFIC. MAYBE YOU CAN'T CHANGE HISTORY, BUT YOUR MISSIONS WILL BE BASED ON YOUR PERFORMANCE. YOU'LL FEEL LIKE YOU'RE RIGHT IN THE ACTION WITH AIRCRAFT EXQUISITELY DETAILED RIGHT DOWN TO THE COCKPIT. SPECTACULAR DAMAGE EFFECTS AND REALISTIC WEATHER OPTIONS ADD TO THE REALISM. AND CARRIER LAUNCHES AND LANDINGS ADD TO THE CHALLENGE. WITH IMPROVED 3-D SCENERY AND A.I., IT'S AN AERIAL COMBAT EXPERIENCE LIKE YOU'VE NEVER HAD BEFORE. SO GET UP THERE AND HOLD ON.

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WWW.MICROSOFT.COM/GAMES/COMBATFS2



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Microsoft

Volume 8 Number 3 June - July 2001

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From The Editor

Tim Dickens, Managing Editor



Train Simulator

We have just received the advance beta copy of Microsoft Train Simulator, and have taken a very close look at it. Train Simulator was first announced last year, and if you inhabit the flight sim Internet sites, you have probably noticed a certain amount of anticipation for this new simulator.

My initial thought on covering Train Simulator in this magazine was: "yeah, it sounds cool, but we cover *flight* simulation here". But as time went by I saw more and more interest among flight sim enthusiasts about this new groundbreaking simulator. And since the purpose of this magazine is to provide information on things of interest to flight sim enthusiasts, I began to reevaluate my initial attitude.

When I loaded Train Simulator for the first time yesterday, and took my first spin around the patch, my mind was made up. I was not only impressed by the visual quality of the simulator, but also, by the impression that this *feels* like a flight simulator. The feeling that makes the virtual world come alive, as the train responds to your control. Much the same way it does when you control an aircraft and observe the scenery through the windshield.

Another factor is that Train Simulator, in its very first issue, is very much a polished product. It does not look like the trial balloon program we are accustomed to seeing when a new flight simulator is brought to market. It looks to be well thought out, with graphics on a par with the very latest technology found in today's state-of-the-art flight sim titles.

So for the time being at least, we will be covering this new simulator, and keeping on top of the 3rd party add-ons that will undoubtedly be coming down the pike soon, since the simulator comes with development tools out of the box. If you think I am all wet here, don't hesitate to say so. Feel free to e-mail me at tim@ftmagazine.com, and tell me we are going off topic. Our aim is always to provide you, the reader, with what you want to see.

Fly!2

I am sure many of you have been waiting in anticipation for the release of Fly!2, and of course, you would expect to see a review of the product in this magazine. Unfortunately we do not have a review of the new version of the simulator in this issue.

The reasons are two-fold. First, our request for an advance copy of the program prior to release, so that we could have time to do a proper review by our printing deadline, was denied by the publisher and developers. In fact, we were refused any kind of information or material. We are mystified by their attitude on this, but that's that.

The second reason is that, from what we have seen in the few days it has been on the shelves, the new version was released to the public in very incomplete form. There is no printed manual in the initial release, and quite a bit of the scenery and features are not included as well. Future Internet downloads and patches are promised by the publisher and developers, but of course, they are not available to anyone now at press time.

So it is likely for the best that we wait until the next issue anyway, so that we will be able to see the product in a more complete form.

Keep The Blue On Top

Pilot's Note: This information is not intended for use in actual flying situations. While the information is as realistic as possible, you should not use it for actual flying instruction. *Safe flying!*

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Flying With SATCO

This is our latest installment on Flying With SATCO (Simulated Air Traffic Controllers Organization). SATCO is the umbrella organization for thousands of flight simulator users who fly online with simulated ATC.

In this issue, we'll look at the weather functions available in *Squawkbox* and learn how to add more realism to SATCO flights.

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Top 5 Essential Simulation Enhancements

Because there are so many MODS (modifications) available, Rod White decided to feature his top five favorites. See if you agree or check out the links for other MODs.

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About this month's cover

Matt Ridgway has again performed his magic in designing and creating the cover for this month's *Flight Simulator World*.

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Commuter Flight in the UK

This month's Round Robin adventure takes place in England. We're flying for British Airways on a routine daily commute between four cities in the United Kingdom.

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Microsoft's New Train Simulator

It's been a long time coming, but welcome to Microsoft Train Simulator.

Get a preview look at the features, scenery and more. of this new exciting simulator.

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Getting Real: Training For An Instrument Rating

Doug Horton continues his experiences on obtaining a real Private Pilot certificate this month.

We know that weather forecasts are often wrong in timing, severity and other factors. Read how this affected Doug after he completed his Private Pilot certification last fall.

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Tsuyoshi Kawahito Interviewed

Rod White talked with Tsuyoshi Kawahito of Third Wire Products about their new 60s-era plane-based combat simulation, simply titled "Project 1."

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NOTAMS: New Products

Piper PA 28 Warrior

Aircraft for Microsoft Flight Simulator 2000 from Pilots

This add-on aircraft, available on CD-ROM, includes a full manual and digitized video clips of the real PA28. You also get a special Load Editor program to "load and unload" your aircraft. The aircraft in the package includes:

- Moving parts (flaps, ailerons, rudder, elevators, prop)
- Specially designed fuselage
- Transparent cockpit windows with panels visible
- Special night lighting effects
- Realistic flight model with accurate fuel consumption.
- Custom panel and gauges, with most functions of the real AC implemented
- Originally recorded PA 28 sound



For More Information

Piper PA 28 Warrior
Pilot's GmbH
Wipplingerstrasse 24-26
A-1010 Vienna
Austria
Web site: www.fly2pilots.com/
SRP: \$24.90

Rhein-Ruhr 2000

Scenery for Microsoft Flight Simulator 2000 from Simaviator

Rhein-Ruhr 2000 is photorealistic scenery based on satellite photos of the Rhein-Ruhr area in Germany with accurate mesh terrain and loads of objects. It includes semi-photorealistic terrain covering the area between Duisburg and Dortmund, with several highly detailed landmarks in various cities. Airports included are:

- Essen-Mülheim
- Dinslaken Schwarze Heide
- Marl Loemühle

The scenery has seasonal textures, FS Traffic tracks, and bonus scenery of London City Centre.



For More Information

Rhein-Ruhr 2000
For more screenshot examples visit:
<http://flightsim.reiffer.com>
More information or to purchase visit:
<http://www.simaviator.com>
\$35.75 US)

For those of you who aren't familiar with the term, NOTAMS is an acronym for NOTices to AirMen. The U.S. Government issues NOTAMS regularly. This issue of *Flight Simulator World* includes our version of NOTAMS — an expanded new products section. It's a regular part of our magazine. The products listed are compiled from press releases and information provided by the respective authors and companies who supply the products. We've taken steps to verify the information with each author or company, but cannot be responsible for inaccurate features, specification or availability dates.

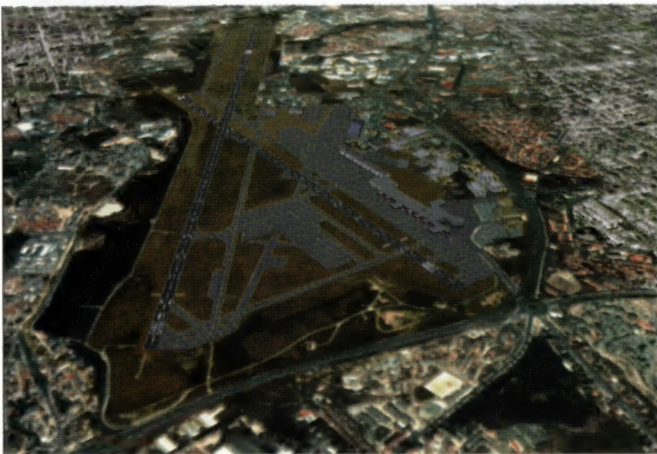
Portugal 2000

Scenery for Microsoft Flight Simulator 2000 from PTSIM

Noted designer Luis Sá has released scenery for this beautiful western European country. The package includes scenery of Lisbon and Oporto, the largest Portuguese cities, scenic Algarve, and accurately rendered countryside landscapes.

Its features include:

- ➔ Accurately placed runways, taxiways and ramps.
- ➔ Night lighting effects in all runways, taxiways, buildings and objects
- ➔ Custom terminal, hangars and buildings in all airports and airfields
- ➔ Authentic airport signs and markings in Lisbon, Oporto and Faro airports
- ➔ Automatic taxing guidance system (APIS) in Lisbon airport
- ➔ Photographic custom textures in the areas adjacent to the main airports
- ➔ Prominent landscapes for VFR flying
- ➔ Detailed coastline with beaches, sea cliffs and main ports
- ➔ Advanced design techniques for low impact on frame rates



For More Information

Portugal 2000
www.ptsim.com/
 SRP: \$22.00 (25.00 Euros)

Korean Combat Pilot

For Microsoft Combat Flight Simulator from Just Flight

This add-on package for either version of Combat Flight Simulator features scenery, aircraft and missions. The package includes:

- ➔ Prop-driven fighters, including the P-51 Mustang, IL-2 Sturmovik and Fairey Firefly
- ➔ Early jets, including the MiG-15, F-86 Sabre and F-80C Shooting Star.
- ➔ Fourteen different aircraft total, including those mentioned above, representing this era in combat aviation. Additional aircraft include a Bell 47 M.A.S.H. helicopter and the B-29 Superfortress.
- ➔ Airbases at Pyongyang and Seoul
- ➔ Detailed carriers, including the USS Essex and USS Leyte.
- ➔ 20 new missions and two major campaigns.
- ➔ Key cities in the region, road and railway.
- ➔ Fully animated control surfaces, undercarriage and moving pilots heads.
- ➔ Custom sounds



For More Information

Blue Arrow Software
www.bluearrow.flight1.com/
 Publisher: Just Flight, Ltd. (www.justflight.com)
 SRP: \$29.99
 US residents can order directly from Just Flight's official partners, Flight One Software, at www.flight1.com/.

Hong Kong Today

Scenery for Microsoft Flight Simulator 2000 from Samsoft

This add-on scenery package for Hong Kong upgrades the default FS 2000 Chek Lap Kok Airport & Kai Tak Airport, and features realistic airport terminals, control tower, taxiways, and airport surroundings. The scenery also includes night textures, advertising signs and buildings, and a realistic Hong Kong Victoria harbor view.



For More Information

Samsoft

www.samsoftpub.com/samsoftfiles/FS2000hktoday/

SRP: \$27.95

Microsoft Implements New Terrain Imagery

Microsoft has purchased ERDAS IMAGINE geographic imaging software to process aerial photography and satellite for its Flight Simulator and Combat Flight Simulator scenery.

This technique utilizes aerial photography and satellite imagery, as well as land classification data and digital elevation models to create terrain in the simulator. Utilizing this technique will greatly enhance the terrain realism, and hopefully, signals that end-users will be able to add further enhancements to the default terrain as well.



FS 2002 screenshot of Seattle-Tacoma International airport, with the Puget Sound and Seattle in the background, rendered using satellite imagery and ERDAS software.

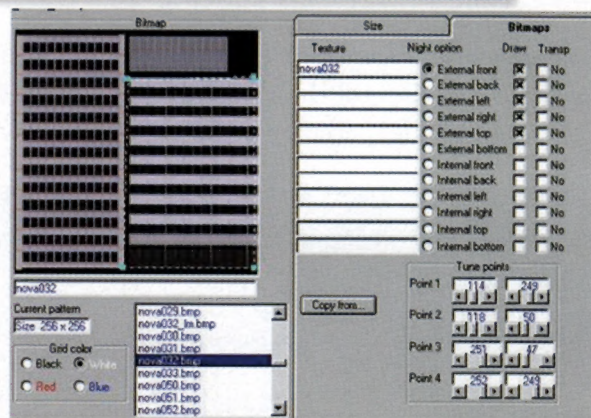
Nova 2000

Scenery-Object Design Utility for Microsoft Flight Simulator by Rafael Sanchez

Nova 2000 is Rafael's most advanced program to design 3D objects for Microsoft's Flight Simulator 2000 and the Combat Flight Simulator 2. The program will generate macro objects compatible with Airport 2.x and Abacus' Airport and Scenery Designer, as well as other scenery design programs such as Architect and FS Scenery Creator.

The program uses 23 different tools to create almost any type of 3D shape you might need. You can create complex structures, control transparencies, apply night/visibility effects, and much more.

Nova 2000 also comes with an extensive library of over 183 textures, with ready-made macros.



For More Information

Rafael Sanchez

www.fsnova.com/

Personal registration: \$28.95

(Contact the author for more information about commercial registration)

Flight Simulator World will continue to update you on the new enhancements that will be found in Microsoft's next release, Flight Simulator 2002.



simulation, not imitation.

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SIMCharts is based on Jeppesen's HP-6000 coverage areas (airports with runways of 6000 feet or longer), with the exception of our three U.S. regions which include all IFR airports. Enroute charts are available with the Combination Package. The worldwide coverage is available on 12 CDs. Choose the desired coverage area, view, print the charts and get ready for takeoff.

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*SIMCharts are based on expired data.

Air Command 3

Air Traffic Control Simulation from Shrapnel Games

Author Joe Jaworski has released this air traffic control simulation through Shrapnel Games. Air Command 3.0 is a Windows 95/98 air traffic control simulator, with multiple difficulty levels, pilot digitized voices, pilot errors and miscommunications, and an airport editor. Using your Radar screen, you direct all air traffic to and from your area, as well as grant permission for takeoffs and landings.

Air Command 3.0 also features:

- Pilot Communications Problems. If selected, pilots may not accurately follow or understand your orders during flight requiring corrective action.
- Doppler precipitation patterns.
- Optional Background Music. Adds to the tension and excitement of the game.
- Supports graphic resolutions of 640x480, 800x600, and 1024x768 at 16 bit color.
- Airport Editor lets you create your own custom airports or download additional airports contributed by other players.
- Multiple Difficulty Levels.



For More Information

Shrapnel Games

Purchase Air Command 3.0 directly from Shrapnel Games via their website (www.shrapnelgames.com).

A demo is also available from Shrapnel Games.

SRP: \$34.95

Menorca2001

Scenery for Microsoft Flight Simulator 2000 from Sim-Wings

This shareware scenery of the Balearic Island of Menorca comes with a detailed international airport that includes static and dynamic aircraft, and custom airport objects. It also contains the "Aero club de Mahon", the city of Ciutadella, and accurate coastlines with lighthouses.



For More Information

Sim-Wings

www.sim-wings.de/

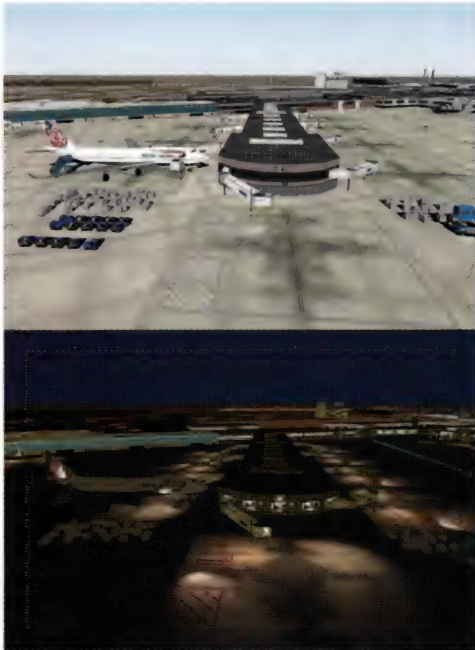
Download price: \$13.00 (DM29.00)

CD-ROM price: \$15.80 (DM34.95)

Philadelphia International Airport

Scenery for Microsoft Flight Simulator 2000 from SimFlyers Associated

This new shareware release features an accurate recreation of Philadelphia and its International Airport, including buildings with custom textures, detailed static objects, dynamic air and ground scenery and full night lighting and seasonal effects. The airport has accurate and detailed buildings, runways, taxiways and airport objects, active docking systems at nearly each gate, and numerous static and dynamic aircraft/vehicles. An airport map yesterday and today is included in the documentation. Future updates will include free FSTraffic tracks for download from their website.



For More Information

SimFlyers Associated
<http://www.simflyers.net/>
 Download price: \$16.50



GF-45 Flight SIM Avionics Unit

Enhance your SIM cockpit with real knobs and active lighted displays. Combine multiple units to create a custom panel to represent NAV1, NAV2, XPDR, ADF, COM radio functions. Installation is plug and play with USB and the most popular SIM programs.

\$99.95 ea. plus S&H

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 Fax 503.671.0168
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Info@goflightinc.com

Flight Director 99

Update fom Flight 1 Software

Flight Director is an integrated Flight Planning, GPS, EFIS, Weather, and ATC companion for Microsoft Flight Simulator. This update adds some new features and support for FS2000. You can update any previous edition of Flight Director 99 with this update. The update also addresses a few other issues, including Error 6 runtime errors, and for flight plan issues below the Equator. There is also an improved MetGen. You can now view and edit custom weather. This update will not work with FD98.

For More Information

Flight 1 Software
www.flight1.com/

Microprose/Hasbro B-17 Flying Fortress Update

The version 2.0 patch for Hasbro's B-17 Flying Fortress: The Mighty Eighth is now available from 3Dfiles.com. This 25 MB download improves simulation and modeling of the engines and adds the following features to the game:

- ➔ B17: Mission and kill markers have been added to the aircraft's 3d model
- ➔ P-38 Cockpit: the missing aiming reticule has been added
- ➔ The Sound mix has been adjusted for clearer audio levels

Bug fixes include:

- ➔ The crash to desktop when using the eject handles in fighter cockpits has been fixed
- ➔ The crash to desktop when trying to access nonexistent Radio Operator action view and then a compartment view
- ➔ The crash to desktop when sending several crewmen to the nose cone at once.
- ➔ The crash to desktop when sending a gunner to the navigator position and then selecting compartment view after subtitled speech appears.
- ➔ The problem with disappearing crewmen.
- ➔ The AI will now feather the prop on an engine that it is forced to stop
- ➔ The mission now ends correctly when the player is forced to perform a forced or emergency landing. In squadron commander mode, planes that have been forced to land will not now reappear in the air after a time skip.



For More Information

Hasbro web site:
www.b17flyingfortress.com/b17.html
Update download:
www.3dfiles.com/patches/b17flyingfortress.shtml

Harrier Jump Jet

For Microsoft Flight Simulator 2000 and Combat Flight Simulator from Just Flight

This Falkland Islands Conflict theme package includes scenery, aircraft and Combat Flight Simulator missions. The package also features:

- ➔ 22 Aircraft, including 17 Harrier variants.
- ➔ Flight models with true VSTOL (Very Short Take Off and Landing) abilities.
- ➔ Bonus aircraft allow you to fly the Sea King helicopter and Argentinean opposition in the South Atlantic.
- ➔ Fully animated gear, control surfaces and rotating jet nozzles on the Harrier.
- ➔ Custom panels for each aircraft with functioning gauges and six different Harrier panel types represented.
- ➔ Custom sounds.
- ➔ Falklands Islands scenery, with elevated mesh terrain.
- ➔ Warships include a detailed HMS Invincible, frigates, destroyers, supply ships and static aircraft on the decks.
- ➔ 20 missions, including interception, ground attack, anti-shiping, and a simulated SAM launcher



For More Information

Alpha Simulations
www.alphasim.co.uk/
Publisher: Just Flight, Ltd (www.justflight.com)
SRP: \$29.99 (£24.99 RRP in the UK)
US residents will be able to order directly from Just Flight's official partners, Flight One Software, at www.flight1.com/

FLY! 2***From Terminal Reality***

The long awaited Fly! 2, from Terminal Reality, has been released and is available in your local software retailer. Despite our requests, a pre-release review copy was not made available to us. Therefore, it was not possible to do a thorough review at press time.

Check our next issue for a detailed look at this new simulator.

For More Information

Terminal Reality
www.iflytri.com/Fly2K.asp
 SRP: \$44.99

**New 767-400ER****Freeware Aircraft from Project Open Sky**

Project Open Sky has released the 767-400ER. This new release utilizes new techniques that result in an aircraft that has a more realistic shape. The results are quite impressive, and if you fly the "heavy iron", it is well worth your time to download this new release.

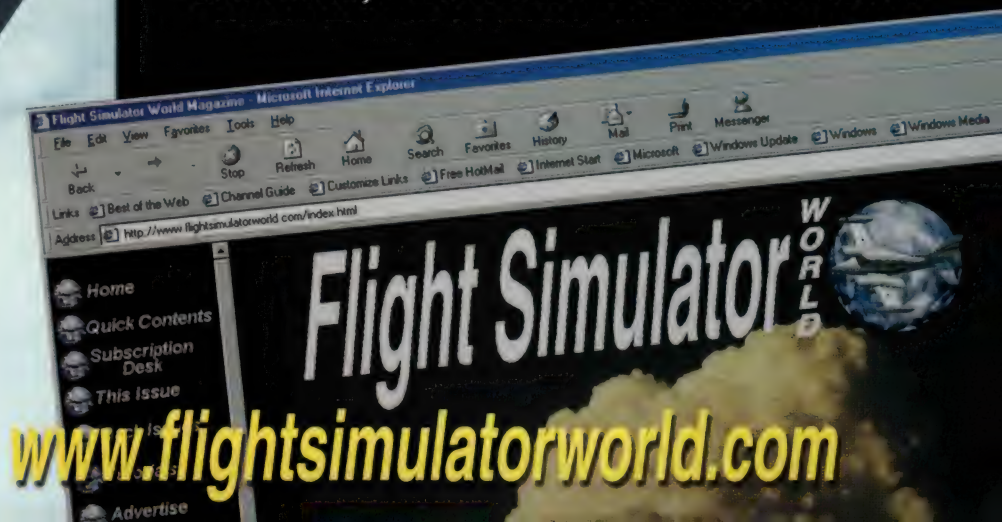
For More Information

Project Open Sky
<http://avsim.com/posky/>



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 brings online articles, aviation photos, aircraft & scenery tutorials, show reports & events, interviews and much more!



Flying

With SATCO

Working With Real Weather

By Doug Horton

This is our latest installment on Flying With SATCO.

SATCO (Simulated Air Traffic Controllers Organization) is the umbrella organization for thousands of flight simulator users who fly online with simulated ATC.

In this issue, we'll look at the weather functions available in *Squawkbox* to learn how to add more realism to SATCO flights. In particular, we'll look at some information on when real pilots must specify an alternate airport in an IFR flight plan. It's not so simple as just choosing another airport near the destination airport, as I've been doing for years in my flight simming. We'll learn what weather information is available through *Squawkbox* and the Internet, learn what the forecast weather criteria are for when an alternate is required, and look at where you can find the appropriate forecast report.

As a second topic, we'll look at the standardized contents of ATC clearances, so that we can improve communication between SATCO controllers and pilots. By the way, some of the information in this article is based upon training materials available on the SATCO website, courtesy of the SATUSA Training Department.

Weather Information

With *Squawkbox* and Pete Dowson's *Fsuipc.dll* module file, *Squawkbox* will continuously update and load real world weather into FS 98 and FS 2000. For flight planning, it is also important to determine the forecast weather at your destination, to see what the approach situation might be and also, to see if you should file an alternate airport.



The Squawkbox FMS ACARS feature can be used to get real world, real time METAR reports.

Working With Real Weather

Until I completed my instrument rating, I had always assumed that you could just plan any desired alternate. Actually, not so, because there are real world requirements we can apply to our SATCO flights to get added realism. Filing an alternate airport can be confusing. For example, in the Chicago area, Midway or even Milwaukee may not qualify as alternates for O'Hare, and nearby airports such as those found in Los Angeles, San Francisco, and New York City may not qualify if the weather is not significantly different than the planned destination airport.

Here are the U.S. requirements for filing alternate airports:

For the period from one hour before until one hour after your ETA, unless the weather is forecast to have a ceiling of at least 2000 feet and a visibility of three miles, your flight plan must include an alternate airport. Note that Instrument pilots remember this as the "one-two-three rule" (one hour before or after ETA, two thousand feet ceiling, and three miles visibility). This rule tells us when an alternate is required. Next, the alternate must pass certain requirements; namely, the forecast weather at the ETA, at the alternate, must be:

- Above minimums for the published instrument approaches in general, and in particular,
- 600 feet ceiling and two miles visibility for precision approaches (such as ILS), and
- 800 feet ceiling and two miles visibility for non-precision approaches (such as VOR and NDB).

How To Read Standard Aviation Weather Reports

METAR is the international standard Aviation Routine Weather Report. Certain elements of a METAR report are different from country to country. For this section we will deal with METAR as used in the United States. Note that all sky conditions are reported in feet Above Ground Level. Only Broken or Overcast cloud layers constitute a ceiling. In order for a pilot to fly under Visual Flight Rules in Class B, C, or D Airspace the reported ceiling must be at or above 1000 AGL and the visibility at or above three statute miles. Anything less than that and the pilot must get an IFR or Special VFR clearance from ATC.

See the chart on page XXX that encodes a sample METAR.

METAR reports are issued approximately hourly to report actual airport conditions. You can quickly get METAR reports for real airports with *Squawkbox* by pressing the ACARS button on the FMS console. That will open the ACARS screen. You can then press any of the first three left-hand "line select" buttons to get real time METAR reports for you origin, destination, or another airport entered into the FMS scratchpad.

A METAR report for Chicago, Palwaukee Airport (KPWK) is shown after pressing the third left-hand line select button. You can also get METAR reports over the Internet from the NOAA website listed below. Just substitute the desired airport code in ICAO (four-letter) format for KDPA, which must be entered in upper case. Note that the National Weather Service provides both the decoded and coded information with the reports obtained with this link.



Latest Terminal Aerodrome Forecast(s) for KDPA

KDPA

The most recent Terminal Aerodrome Forecast from KDPA in our system was generated at the source at:

The forecast is:

KDPA 261122Z 261212 2000RKT P6SM SCT250
FM1300 210130ZKT P6SM SCT100
FM1300 220130ZKT P6SM SCT090 BKN200
TEMPO 0304 BKN050
FM0400 26012KT P6SM BKN050 BKN120
BECMG 0404 33010KT
FM0800 36012KT P6SM BKN

Data distribution via the Internet is not considered an operational delivery mechanism by the NWS due to our inability to ensure access to this service; therefore, the information available here should not be used for flight planning or other operational purposes. Please see our additional disclaimer.

Author: Alan Daring, NWS Office of System Operations

Terminal Aerodrome Forecast (TAF) report from the National Weather Service for KDPA.



National Weather Service
Internet Weather Source

Main Page
Current Conditions
in the United States
world wide

Current Weather Conditions
Chicago / West Chicago, DuPage Airport, IL, United States

Conditions at Apr 25, 2001 - 08:53 AM EDT
2001-04-25 1253 UTC

Wind from the W (270 degrees) at 12 MPH (11 KT)
Visibility 10 miles
Sky conditions partly cloudy
Weather Light rain
Precipitation last hour A trace
Temperature 48.0 F (8.9 C)
Dew Point 43.0 F (5.6 C)
Relative Humidity 52%
Pressure (estimated) 30.25 in Hg (1024 hPa)
Obs: KDPA 251253Z AUTO 27011KT 10SM -RA SCT070 0906 A3025 RMK AO2 RAB03E16840 9LP247 P0000 T00890061 TSNQ

Maximum and Minimum Temperatures

Maximum	Minimum
Temperature	Temperature
F (C)	F (C)
48.9 (9.3)	41.0 (5.0)
in the 6 hours preceding Apr 25, 2001 - 06:53 AM EDT / 2001-04-25 1153 UTC	
61.0 (16.1)	41.0 (5.0)
in the 24 hours preceding Apr 25, 2001 - 12:53 AM EDT / 2001-04-25 0553 UTC	

METAR report from the National Weather Service for KDPA. METAR report from the National Weather Service for KDPA.



Squawkbox FMS

DISC NAV POS ACARS PROG EXIT

ACARS

METAR REPORT

KPWK 251353Z 2500RKT 10S
M -RA SCT032 11/06 A3025
RMK AO2 RAB53 SLP 256 P0
000 T01060061

ACARS

OK

PREV NEXT

A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z . / CLR

Squawkbox FMS ACARS screen showing real METAR report for KPWK.

Decoding A Sample METAR

METAR KABC 121755Z AUTO 21016G24KT 180V240 1SM R11/P6000FT
-RA BR BKN015 OVC025 06/04 A2990 RMK A02 PK WND 20032/25
SLP125

METAR

Type of Report - either routine (METAR) or special (SPECI)

KABC

ICAO Identifier - four letter ICAO Airport Code

121755Z

Date and Time - first two digits are the date followed by the hour and minutes in UTC.

AUTO

Modifier – none for a manual report, AUTO for an automated report, and COR for a corrected report.

21016G24KT 180V240 VRB04KT

Winds - normally a 5-digit grouping (6-digits if speed is over 99 knots). The first 3-digits is the direction, the next two or three is the speed. G indicates gusts with the highest gust report after it. V indicates variable wind direction. VRB indicates variable wind speed 6 knots or less.

1SM

Visibility - prevailing visibility reported in Statute Miles.

R11/P6000FT

RVR Values - "R" followed by the runway number and the visual range in feet. A "P" (for plus) when the value is more than the maximum, and an "M" (for minus) when it is below the minimum. A "V" between two values indicates variable.

-RA BR

Weather Phenomena - this example shows light rain showers with mist (broken).

BKN015 OVC025

SKY CONDITIONS - the amount of cloud cover, with increasing cloud coverage from Clear, Few, Scattered, Broken, and Overcast, and cloud base height. Note that layer thickness is not provided.

06/04

TEMP/DEW POINT - in degrees Celsius. Temperatures below zero are prefixed with an "M" (for minus).

A2990

ALTIMETER - reported in inches of mercury.

REMARKS

Included as appropriate, though we'll skip this section.

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P-40M "WARHAWK"



FM-2 "WILDCAT"



YAK-3M



Bu133C "JUNGMEISTER"



CA-16 "WIRRAWAY"



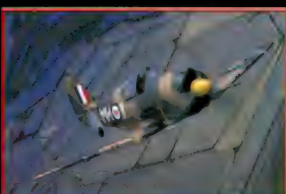
RYAN STM-2



B-25J "MITCHELL"



FIAT G.59



CA-19 "BOOMERANG"



AT-6 "TEXAN"



"SPITFIRE" Mk. XVIe



B-17G "FLYING FORTRESS"

Flying With SATCO

You can compare coded and decoded information in the Internet-based real DPA METAR report to test your understanding of the codes, which you will need to know to read *Squawkbox* METAR reports. Though the report already provides decoded weather summary, there is more specific information in the coded report than provided in the National Weather Service decoding, which real pilots would want to know. Specifically, you can see that the METAR report's "SCT070" is translated to mean "partly cloudy." The coded information indicates that there is a scattered cloud layer at 7000 feet AGL. That's more specific and important to know.

Since the METAR report is for current weather, you may wish to look at an actual forecast for determining the need for selecting an alternative airport. To do so, you can use a Terminal Aerodrome Forecast (TAF) report. TAF reports are also available on the NOAA site. Just fill in the desired airport designator in ICAO format. After pressing the SUBMIT button, you'll see the requested report. Note that this report is only available in coded format.



TAF Data Access

Current and recent Terminal Aerodrome Forecasts from around the world are available from the NWS either through this presentation or via anonymous FTP at <ftp://weather.noaa.gov/data/forecasts/taf>. TAFs are available as [individual forecasts](#) or in [cycle files](#). The information available here is represented in a [meteorological code](#).

Individual Reports

To display the most recent TAF for one or more observing locations, enter the four-character ICAO Location Indicators in the field below separated by one or more blanks.

Enter one or more **four-character** ICAO Location Indicators below. Make sure to enter one or more spaces between each indicator.

National Weather Service screen for accessing TAF reports.

Here is my decoding of the first few lines of this TAF report: day 26 at time 1122Z, report for period from 261200 to 1200 on the 27th, winds from 200 at 8 knots, visibility 6+ statute miles, sky condition scattered at 25,000 feet. From 1500Z, winds from 210 at 13 knots, gusting to 23 knots, visibility 6+ statute miles, scattered at 10,000 feet. From 2100Z, winds from 220 at 15 knots, gusting to 25 knots, visibility 6+ statute miles, scattered at 9000, broken at 20,000. Temporarily between 0200Z and 0400Z, broken at 6000, etc. As you can see, it's a fairly clear but windy day for flying around my home airport of DuPage.

Clearances

Though we may associate the occurrence of a clearance as associated with the clearance received prior to departure on an instrument flight plan, ATC can issue clearances at their discretion. In fact, all directions from ATC are actually clearances, though partial, if only to a new altitude or changing to a new controller frequency.

For example, full ATC clearances normally contain the information that can be remembered with the acronym CRAFT: Clearance limit, Route, Altitude, Frequency, and Transponder. Clearance for use of a specified Departure Procedure (DP), or a clearance to a Hold, are additional types of clearance information.

A. Clearance Limit

The traffic clearance issued prior to departure will normally authorize flight to the airport of intended landing. Under certain conditions, at some locations a short-range clearance procedure is utilized whereby a clearance is issued to a fix within or just outside of the terminal area and pilots are advised of the frequency on which they will receive the long-range clearance directly from the Center controller.

B. Departure Procedure

Headings to fly and altitude restrictions may be issued to separate departing aircraft from other air traffic in the terminal area. Where the volume of traffic warrants, Departure Procedures (DPs, formerly SIDs) have been developed.

C. Route of Flight

1. Clearances are normally issued for the altitude or flight level and route filed by the pilot. However, due to traffic conditions, it is frequently necessary for ATC to specify an altitude or flight level or route different from that requested by the pilot. In addition, flow patterns have been established in certain congested areas or between congested areas whereby traffic capacity is increased by routing all traffic on preferred routes. (In real world aviation, information on these flow patterns is available in offices where preflight briefing is furnished or where flight plans are accepted.)

2. When required, air traffic clearances include data to assist pilots in identifying radio reporting points. It is the responsibility of pilots to notify ATC immediately if their radio equipment cannot receive the type of signals they must utilize to comply with their clearance.

D. Altitude Data

1. The altitude or flight level instructions in an ATC clearance normally require that a pilot "MAINTAIN" the altitude or flight level at which the flight will operate when in controlled airspace. Altitude or flight level changes while en route should be requested prior to the time the change is desired.

2. When possible, if the altitude assigned is different from the altitude requested by the pilot, ATC will inform the pilot when to expect climb or descent clearance or to later request altitude change from another ATC facility. If this has not been received prior to crossing the boundary of the ATC facility's area and assignment to a different altitude is still desired, the pilot should reinitiate the request with the next facility.

3. Though not often used in flying with SATCO, the term "cruise" may be used instead of "MAINTAIN" to assign a block of airspace to a pilot from the minimum IFR altitude up to and including the altitude specified in the cruise clearance. The pilot may level off at any intermediate altitude within this block of airspace. Climb/descent within the block is to be made at the discretion of the pilot. However, once the pilot starts descent and verbally reports leaving an altitude in the block, the pilot may not return to that altitude without additional ATC clearance.

E. Holding Instructions

1. Whenever an aircraft has been cleared to a fix other than the destination airport and delay is expected, it is the responsibility of the ATC controller to issue complete holding instructions (unless the pattern is charted), an Expect Further Clearance (EFC) time, and a best estimate of any additional en route/terminal delay.

2. If the holding pattern is charted and the controller doesn't issue complete holding instructions, the pilot is expected to hold as depicted on the appropriate chart. When the pattern is charted, the controller may omit all holding instructions except the charted holding direction and the statement *AS PUBLISHED*, e.g., "HOLD EAST *AS PUBLISHED*." Controllers shall always issue complete holding instructions when pilots request them.

3. If no holding pattern is charted and holding instructions have not been issued, the pilot should ask ATC for holding instructions prior to reaching the fix. This procedure will eliminate the possibility of an aircraft entering a holding pattern other than that desired by ATC. If unable to obtain holding instructions prior to reaching the fix (due to frequency congestion, stuck microphone, etc.), hold in a standard pattern (right-hand turns, one-minute legs) on the (inbound) course on which you approached the fix and request further clearance as soon as possible.

In this event, the altitude/flight level of the aircraft at the clearance limit will be protected so that separation will be provided as required.

4. When an aircraft is three or fewer minutes from a clearance limit and a clearance beyond the fix has not been received, the pilot is expected to start a speed reduction so that the aircraft will cross the fix, initially, at or below the maximum holding airspeed. Maximum holding airspeeds are: under 6000 feet – 200 knots, between 6001 and 14,000 feet – 230 knots, and above 14,000 feet – 265 knots.

5. When no delay is expected, the controller should issue a clearance beyond the fix as soon as possible and, whenever possible, at least five minutes before the aircraft reaches the clearance limit.

6. Pilots should report to ATC the time and altitude/flight level at which the aircraft reaches the clearance limit and report leaving the clearance limit.

F. Frequency

ATC will provide the initial frequency and all subsequent frequencies. Though many pilots try to remember the new frequency and quickly tune it, it helps to write it down, as being on the wrong frequency is quite embarrassing. With *Squawkbox*, selection of the next controller position provides for automated COM frequency in FS 98 and FS 2000.

G. Transponder

ATC will provide the initial and any subsequent transponder frequency settings.

Though these instructions are taken from the real world and may not be completely applicable to flying with SATCO, they provide a foundation that will increase understanding and realism. I recommend that when you're flying with SATCO, you keep a pencil and paper ready to write down any direction you receive from ATC.

Yes, it may be visible in the *Squawkbox* chat box for a few minutes, but if there are many other pilots communicating with the same controller, your last direction may scroll out of view very quickly.

Summary

In a companion article in this issue, I describe how I got started with instrument training last fall (see "Getting Real: Training For An Instrument Rating" on page 26). I begin my mentioning some of my personal experiences during my first few flights after getting my Private Pilot certificate.

The lesson learned is that we can't wish for the weather we want. The forces of nature determine the weather and we can only react to it. What's most impressive is how we can now use the power of the Internet and the latest PC

Flying With SATCO

flight simulation programs to insert real weather into our flight simulation sessions. *Squawkbox* brings real weather

into our SATCO experience and knowing more about weather will increase the realism of our online flying.

For More Information

SATCO Website

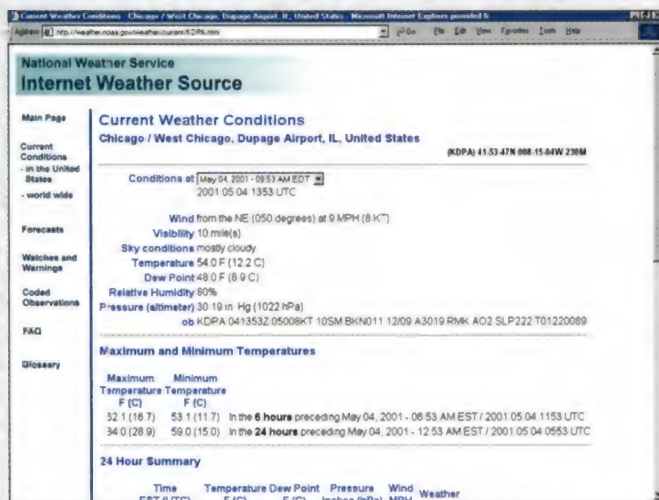
You can find the SATCO website on the Internet at www.satusa.org.



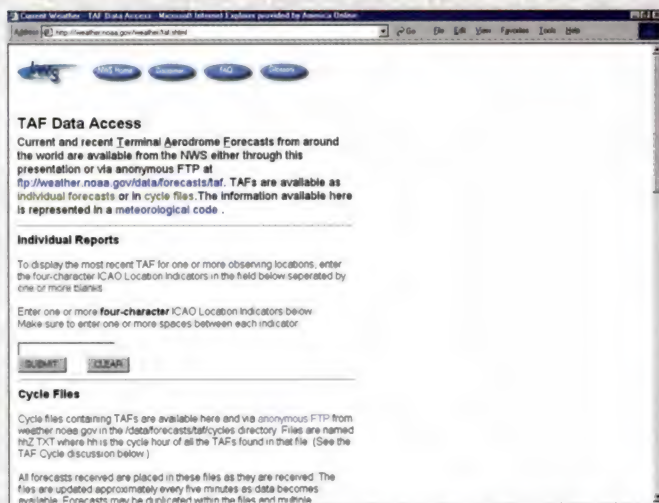
METAR reports

You can get METAR reports over the Internet from these sources:

From the NOAA website (<http://weather.noaa.gov/weather/current/KDPA.html>).

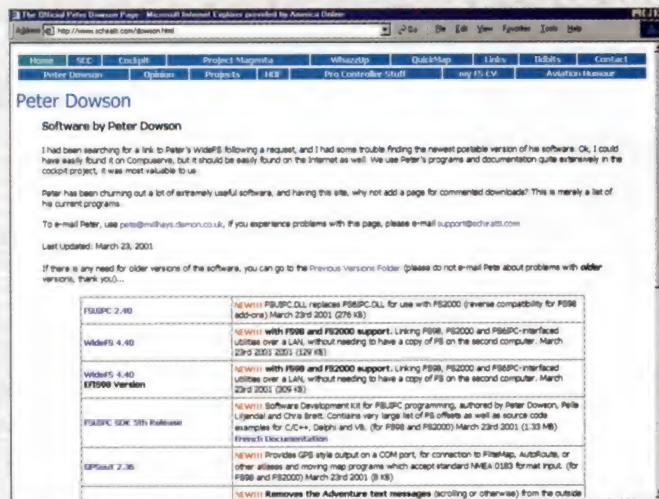


TAF reports are available from the NOAA site as well (<http://weather.noaa.gov/weather/taf.shtml>).



Pete Dowson

You can find Pete Dowson's Fsuipc.dll module at www.schiratti.com/dowson.html.



Round Robin Adventures

Commuter In United Kingdom

This Round Robin adventure takes place in England. The scenario for this exercise is this: We're flying for British Airways and are on a routine daily commute between four cities in Great Britain.

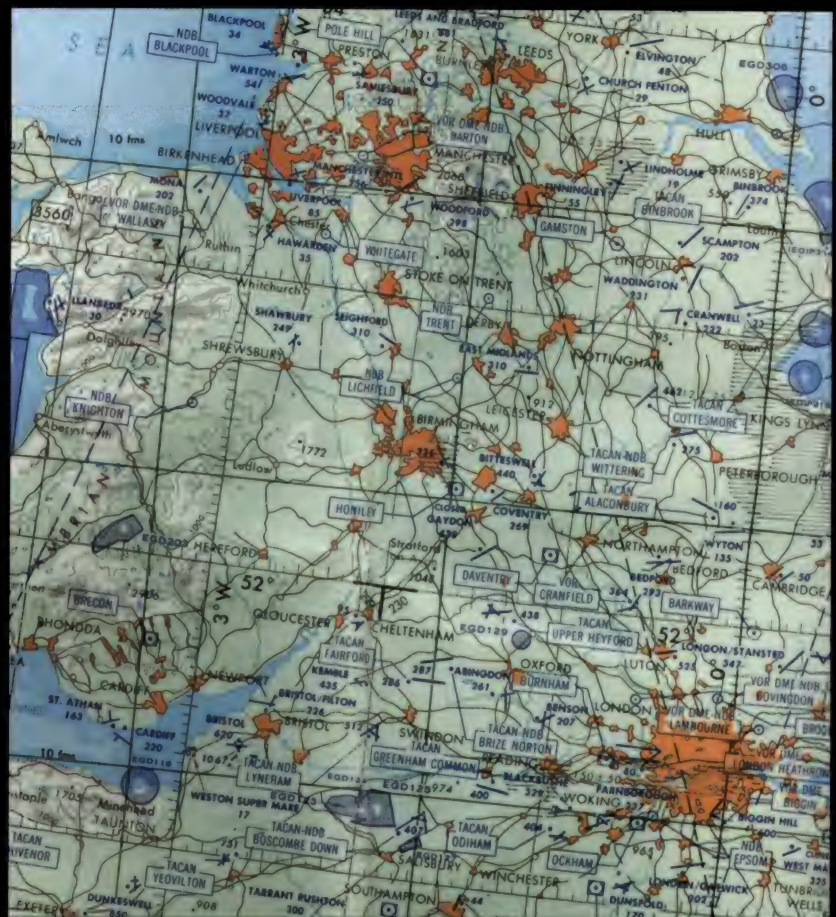
Al Pelletier

Our plane is a twin turbo. I flew a Dash 8 in British Airways colors done by Rick Piper, Chris Bawden and Gerritt Kranembarg. This is an excellent plane to fly. There are many twin turboprops available at the regular Flight Sim web sites, and you can find this one at my web site, in the full throttle directory, listed below. Look for the England directory. You could also fly this with a Corporate Jet like the Abacus Corporate Pilot collection or a freeware aircraft.

This Issue's Round Robin Route:

Manchester (EGCC)
to
Birmingham (EGBB)
to
Heathrow (EGLL)
to
Leeds Bradford (EGNM)
and back to Manchester (EGCC)

Flight Plan						
Edit View Navigation Window Help						
Waypoint	ID	Elev	Position	To Next Waypoint		
	Freq			Course	Distance	Comments
Manchester	EGCC	256	N 53° 21.2'	160T	57.1 nm	VOR MCT 113.55
	128.16		W 2° 16.5'			
Birmingham	EGBB	325	N 52° 27.4'	152T	6.8 nm	NDB BHX 406
	126.27		W 1° 45.0'	158M	57.1 nm	
Heathrow	HOW	436	N 52° 21.4'	132T	55.9 nm	
	113.65		W 1° 39.8'	138M	63.9 nm	
Leeds Bradford	BNN	499	N 51° 43.6'	168T	15.7 nm	
	113.75		W 0° 33.0'	173M	119.7 nm	
Heathrow	EGLL	79	N 51° 28.3'	351T	36.6 nm	VOR LON 113.60
	123.90		W 0° 27.6'	356M	135.4 nm	
Leeds Bradford	CFD	0	N 52° 04.5'	351T	73.5 nm	
	116.50		W 0° 36.6'	356M	172.0 nm	
Leeds Bradford	GAM	121	N 53° 16.9'	325T	43.1 nm	
	112.80		W 0° 56.8'	330M	245.5 nm	
Leeds Bradford	LBA	141	N 53° 51.9'	283T	0.3 nm	
	402		W 1° 39.2'	289M	288.6 nm	
Leeds Bradford	EGNM	679	N 53° 52.0'	215T	37.3 nm	NDB LBA 402
	118.02		W 1° 39.6'	221M	288.9 nm	
Manchester	MCT	262	N 53° 21.4'	247T	0.5 nm	
	113.55		W 2° 15.7'	253M	326.2 nm	
Manchester	EGCC	256	N 53° 21.2'			VOR MCT 113.55
	128.16		W 2° 16.5'		326.6 nm	



The Round Robin flight plan (left) and our flight area (right)

About Round Robins

If you've flown previous Round Robins, skip this sidebar, jump right in and have fun. For the experienced flyers, please be patient through all of the explanations, directions and extras. I direct this at newcomers to the flying world. I must stick to plain language.

For those who are new to this, Round Robins are published with the intent of having Flight-Simmers fly, look at the scenery, refresh our geography, practice our cross country navigation, do some approaches at different airports all over the world, and have some FUN.

In the message, you will be getting info like: airport departure and runway numbers, VOR and ADF frequencies enroute, two or three middle airport destinations, and instructions for either VFR or instrument approaches. Then back to your point of departure (Round Robin). You will also be given ILS and LOM frequencies, visibility minimums, procedures etc. You will get info on the scenery needed to complete the flight and where to get it. Also, who created the scenery (for non-commercial) and a little background on the geography of the area. After you do a few of these, you will have a much better command and understanding of the different types of published procedures. You will learn to handle a lot of information in a very short time, while still maintaining control of your aircraft.

May I suggest, that you READ the route a couple of times before starting out, so that you'll have the flight plan fairly clear in your mind. Especially in a fast medium jet, there isn't much time to spare and definitely no room for errors. Remember this rule: "Never let an aircraft take you somewhere your brain didn't get to five minutes earlier".

Note that for the purpose of this adventure, we will pretend that we are getting Radar vectors to different VORs or ILS interception points. In the "Real" world of today, aircraft usually get vectors to the interception points, to insure proper separation. I'm also assuming that you will have a good look at the Approach Plates for each segment. If they are not all published in the magazine, you can get them at my web site also. Check for address below.

Recommended Add-on Scenery Files

This Round Robin was created using the Microsoft default FS 2000 scenery. It can also be flown with any Simulators that have the required Nav aids and Airports.



Dash 8 in British Airways colors, by Rick Piper, Chris Bawden and Gerritt Kranembarg. This is an excellent plane to fly

First leg:

**Manchester (EGCC)
To
Birmingham (EGBB)
(Approximately 65nm)**

- ◆ Set your clock to 07:15 local time. Make the season summer, the weather is 2000 feet ceiling, broken/Stratus 7/8, visibility 10 nm in light rain, wind from 200 degrees at 10 nm. You can also try this exercise with real world weather. It makes it very interesting.
- ◆ Go To Manchester runway 24R.
- ◆ Dial in the HONILEY (HON) VOR at frequency 113.65 on NAV 2, and the LOC I-BIR frequency 110.1 on NAV 1. Set your OBS course to 152 degrees on NAV 1. You can also tune in the Birmingham (BHX) NDB frequency 406.0.
- ◆ Take off from runway 27 and maintain runway heading, climbing to 1500 feet, then turn left to heading 160 degrees and continue your climb to 4000 feet, tracking the HON VOR.
- ◆ 25nm out descend to 2800 feet and turn right to heading 185. Reduce your airspeed to below 185 Kts to intercept the LOC in preparation for an ILS approach to runway 15 at EGBB (Actual course 152 degrees, runway length 8546 feet, and elevation 325 feet).
- ◆ Intercept the LOC and continue with the approach
- ◆ 5 nm back you are cleared for landing with a full stop on runway15 at Birmingham. Check to make sure your gear is down.
- ◆ Land at Birmingham and proceed to the terminal. Unload and pick up passengers, then carry on with the flight.



The Dash 8 over the British countryside

Second Leg

**Birmingham (EGBB)
To
Heathrow (EGLL)
Approximately 60 nm**

- ◆ The weather is still the same. Set your clock to 08:30 local time.
- ◆ Dial in the BOVINGTON (BNN) VOR at frequency 113.75 on NAV 2.
- ◆ Taxi to and takeoff from runway 15 and maintain runway heading, climbing to 2000 feet. Then turn left to heading 140 and track the BNN VOR to on top, while continuing climb to 5500 feet.
- ◆ Dial in the LOC (I-LL) at frequency 109.5 and set course 273 on your NAV 1 OBS in preparation for an ILS/DME approach to runway 27L at Heathrow (Actual course 273 degrees, runway length 12000 feet and elevation 80 feet).
- ◆ Over BNN, turn left to heading 137 and descend to 2500 feet. Start your turn about 2 nm before you are on top of the VOR for better accuracy. Reduce your airspeed to below 185 kts.
- ◆ Remain on the 137 radial of the BNN VOR until your are 19 nm past the VOR. Then turn right to heading 220 and intercept the LOC. Continue with the approach.
- ◆ 5 nm back, you are cleared for a full stop landing on runway 27L. Check to make sure your gear is down.
- ◆ Land at Heathrow. Take the first exit to the right and proceed to the terminal to unload and load passengers.

Third Leg:

**Heathrow (EGLL)
To
Leeds Bradford (EGNM)
Approximately 150 nm**

- ◆ Set your clock to 16:30 local time. The weather is still the same (or use real weather).
- ◆ You should still have the BNN VOR on NAV 2, at frequency 113.75.
- ◆ Taxi to and takeoff from runway 27R, maintaining runway heading, and climb to 2500 feet. Then make a right hand turn to 005 and track the BNN VOR to on top while continuing your climb to 9000 feet.
- ◆ On top of BNN dial in and track the Cranfield (CFD) VOR at frequency 116.50 until on top. There is no DME for this VOR, which is located 21 nm out of BNN.
- ◆ Over CFD turn left to heading 355. Dial in and track the GAMSTON (GAM) VOR at frequency 112.80 until on top. While enroute, dial in the NDB LEEDS on the airfield at Leeds Bradford on frequency 402.5. *Note: Very important- notice the .5 frequency. Go to options, instruments, and set ADF in .1 KHZ increments. Then set the frequency via the Navigation/Radios menu, if your panel doesn't allow the .5 option.* Also dial in the LOC LBF frequency 110.9 on NAV 1 and set your OBS to 142 in preparation for an ILS/DME approach to runway 14 at Leeds Bradford. (Actual course 142, runway length 7300 feet and elevation 682 feet).
- ◆ Over the GAM VOR turn left to 333 and home the LBA NDB to on top. Descend to 3000 feet.



Turning final for Landing at London Heathrow

Amtd 13 0000

ILS/DME RWY 15

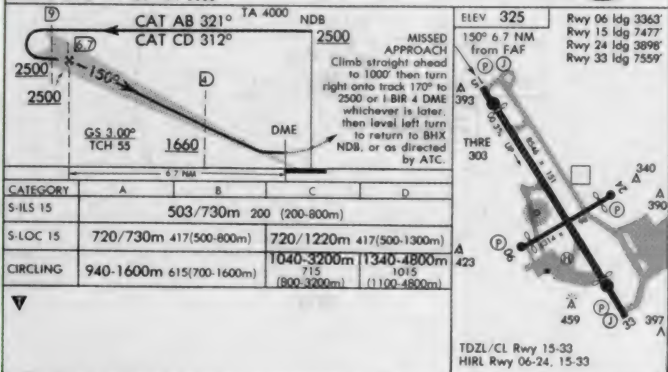
(USA) AL 3041 (UK)

BIRMINGHAM (EGBB)
BIRMINGHAM, ENGLAND

ATIS 126.275
BIRMINGHAM APP CON
118.05
BIRMINGHAM TOWER
118.3
GND CON
121.8
ASR



EMERG SAFE ALT 100 NM 5000



ILS/DME RWY 15

52°27'N, 01°45'W
33

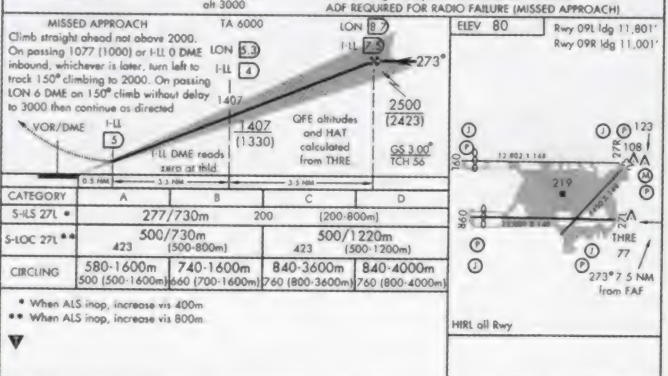
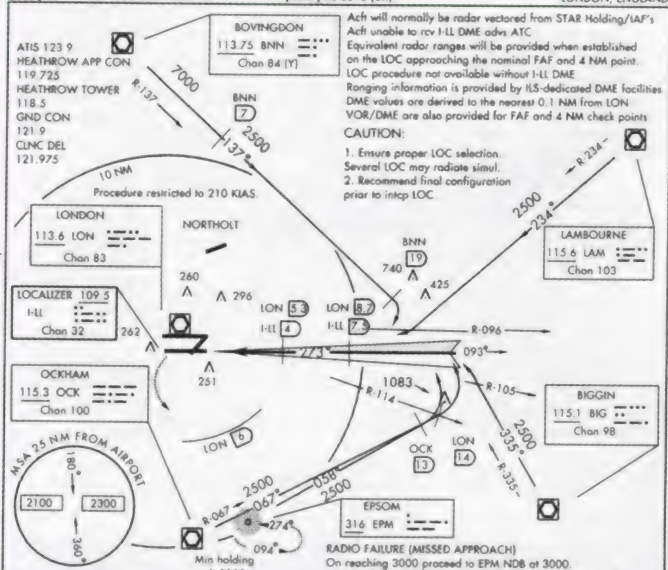
BIRMINGHAM, ENGLAND
BIRMINGHAM (EGBB)

Amtd 1 00335

ILS/DME RWY 27L

[USAF] AL-8016 (UK)

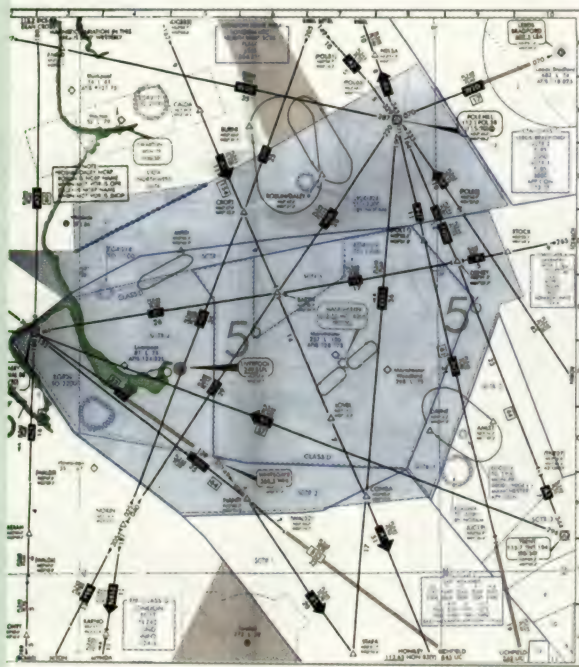
HEATHROW (EGLL)
LONDON, ENGLAND

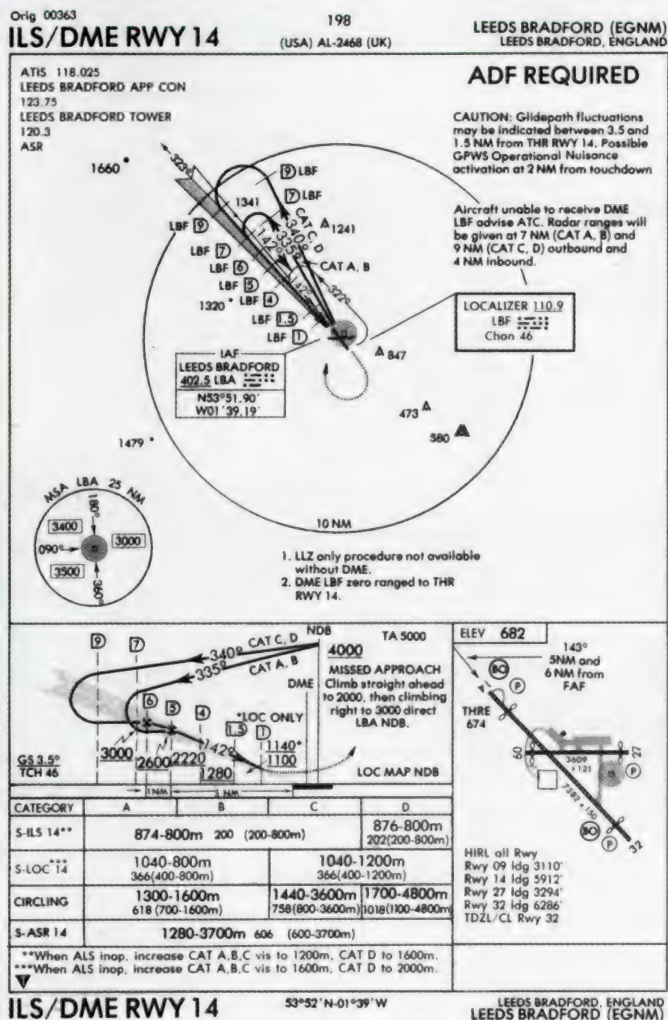


ILS/DME RWY 27L

51°28'00"Z'W
141

LONDON, ENGLAND
HEATHROW (EGLL)





Approach plates (from previous page to above): Birmingham (EGBB), London Heathrow, Leeds Birmingham

- ◆ Over the LBA NDB turn right to heading 340, and reduce to approach airspeed. Maintain this course, speed and altitude until 9 nm out of the LBF localizer. Then turn left to heading 175 to intercept the LOC. *Terrain warning: Do not break 3000 feet until you are 6 nm out and established on the LOC. There are hills up to 1350 feet elevation in the area!*
- ◆ Intercept the LOC. The Glide Slope is 3.5 degrees, and therefore, requires a little steeper rate of descent than normal.
- ◆ 5nm back, you are cleared to land with a full stop on runway 14. Check to make sure your gear is down.

(Bottom row, previous page: Terminal charts for London (far left) and Manchester (near left))

Commuter In United Kingdom

- ◆ Land at Leeds Bradford and taxi to the terminal via the first available left exit. Park at the terminal to unload and load your passengers.



Over Leeds Birmingham

Fourth leg:
Leeds Bradford (EGNM)
Back to
Manchester (EGCC)
Approximately 37 nm

- ◆ Set your clock to 19:00 local time. The weather is your option. Using real weather is great at this point.
- ◆ Dial in the Manchester VOR (MCT) at frequency 113.55 on NAV 2, and the Manchester (MCH) NDB at frequency 428.0. Also dial in the LOC at frequency 109.5 on NAV 1 and set your OBS to 237 in preparation for an ILS/DME approach to runway 24R at Manchester. (Actual course 237 degrees, runway length 10000 feet and elevation 257 feet). *Note. If the weather is clear, this is a good time for a visual approach at Manchester, using the NDB for guidance to the airport.*
- ◆ Taxi to and takeoff from runway 32, maintaining runway heading, and climb to 2500 feet. Then make a left climbing turn to 4500 feet to heading 210. Track the MCT VOR.
- ◆ 20 nm out descend to 2900 feet and turn left to heading 205 to intercept the LOC.
- ◆ Intercept the LOC or proceed with a visual approach.
- ◆ Land at Manchester and taxi to the terminal. Park at the terminal and shut down to unload your passengers.

Welcome home!



**Al Pelletier's work/
flight station**

About the author.....

Al was born in Matane, Quebec in 1948. He served 25 years as aircrew in the Royal Canadian Airforce, in a non-pilot role. His job centered on RADAR, Forward Looking Infrared (FLIR) and radio communications. He has served over 6,000 hours in everything from the Canadair Argus, the Tracker, a Sea-King Helicopter, DC-3s and P-3s.

Al retired from the RCAF in 1990 and is now the owner of a computer retail store. His hobbies include fishing, gardening and, of course, flight simulation.

Additional Information

You'll find the DASH 8 airplane and panel, along with high-resolution scans of maps and charts for this article on my web site:

<http://www.simwings.net>

Go to the Full Throttle area and look for England.

Acknowledgments

Many thanks to Chris Squire for test flying the route. Chris is a retired military pilot with over 12,000 hours of flying.

As a reminder, the navigation charts are **not to be used for real world navigation**.

Cheers and keep on reading *Flight Simulator World*.

Did you know this about Heathrow?

Heathrow started as a privately owned small grass airfield called the Great Western Aerodrome. At the time it was used mostly for test flying because London's commercial flights took off from nearby Heston and Hanworth Park airfields. Its only terminal fifty years ago was an army surplus tent within walking distance of the aircraft. However, it now boasts a population of 60,000 workers.

World War II priorities changed the course of Heathrow's history. The Air Ministry took it over in 1944 and developed it as a major transport base for the Royal Air Force. However, the war ended before the work was completed. Because of the prospect of a huge expansion in civil aviation after the war, London needed a large airport with modern equipment. Experts agreed the partially built site at Heathrow was ideal. One runway was ready for use and when the Ministry of Civil Aviation took it over in 1946.

Three runways were completed within a year and work began on three more, which were later abandoned as unnecessary. New, permanent building replaced the tent terminal in the early 1950s. The popularity of the airport created a demand for larger passenger facilities. The Queen inaugurated a new building now called Terminal 2 in 1955. Also, the tunnel that provides the main road access to Heathrow's central area was opened.

The Oceanic terminal was next. It was designed to handle long-haul carriers, which is still its function although it's been renamed as Terminal 3. It was followed by the opening of Terminal 1 in 1968. Increased congestion in the central area led to the construction of Terminal 4 in 1986 on the south side of the airport.

The traffic pressures on London's main airport continue to increase. The city rail link to the airport central area is open and Heathrow is trying to build another passenger terminal but is meeting with local opposition. Whatever the outcome, the grass airfield with the tent terminal has become a world name.

Voice Control That Works!



"Landing lights on"

"Gear down"

"Flaps down"

"Tower, GC117 with you for 27"

"GC117, cleared to land runway 27"

"GC117 is cleared to land"



"I recommend it highly"

- Greg Vederman, PC Gamer

"Excellent voice recognition"

- CNET Gamecenter

"Game Commander rocks"

- PC World

"A must have"

- ZDNET GameSpot

"Amazing to use"

- Computer Gaming World

"Revolutionary"

- CombatSim.com

"A real winner"

- Flightsim.com

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Control your aircraft

Stop struggling to remember a plethora of keystrokes for operating your aircraft. Just say what you want to do with Game Commander™. "Flaps up." "De-icer on." "Switch to left fuel tank." It's like having a co-pilot at your beck and call. Especially helpful if you're trying to manage a 747-400 all by yourself.

Interact with air traffic control

Instead of navigating through countless menus to interact with air traffic control, simply talk to them like a real pilot. "Request field advisory." "Ready for takeoff." "Mayday, mayday, mayday!" Now you can finally use the radio the way it was meant to be used. With your voice.

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Take command

Game Commander allows you to use any word or phrase to trigger keystrokes. **With no voice training.** And you can program up to 256 keystrokes for each command to carry out a series of actions or navigate even the deepest of nested menu options. Since Game Commander sends keystrokes as if you had typed them, it will work with any simulation, game, or application that accepts keystrokes.

Use voice chat with it too

Game Commander MX allows you to use voice control along with voice chat programs such as TeamSound™, Roger Wilco™ (used with SATCO™ SquawkBox™ for live ATC), BattleCom™ and many others that are freely available on the Web. No special hardware is required.

Experience it today

If you have a full duplex sound card and a microphone (preferably a noise canceling mic), you can try Game Commander and experience the improved convenience, realism, and immersion it brings to your favorite simulations and games. Download the free trial today at www.gamecommander.com/trial/



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Voice Control for Games
and Simulations

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Getting Real

Training For An Instrument Rating

After several surprising and extremely humbling weather occurrences on my first few flying excursions after completing my Private Pilot certification, it became very clear that one can't "wish the weather" they want. While instrument-rated pilots of small aircraft may not choose to deliberately fly in instrument conditions, it became obvious that a form of "flight insurance" would be valuable and that I would immediately begin training for an instrument rating.

In the beginning of an instrument training textbook by Peter Dogan, the author relates a true story about two married couples who intend to fly their respective general aviation aircraft from New Jersey to Florida for a shared vacation. The pilot who is Instrument rated completed the flight with his wife in one long day of flying. The non-Instrument rated pilot and his wife arrived *one week later* (!), after dodging rainy weather and low visibility, and renting hotel rooms for several extra nights in several cities not on the original itinerary.

We all know from personal experience that weather forecasts are often wrong in timing, severity and other factors, and this was demonstrated several times to me immediately after I completed my Private Pilot certification last fall. Just four days after my checkride, I flew my wife and myself westward across northern Illinois on a Sunday morning.

By Doug Horton



While instrument-rated pilots of small aircraft may not choose to deliberately fly in instrument conditions, it became obvious that a form of “flight insurance” would be valuable and that I would immediately begin training for an instrument rating.

We intended to look at the fall colors near historic Galena, Illinois, land briefly in Dubuque, Iowa, then return to our home field of West Chicago, DuPage (DPA). The visibility was seven miles when we left DuPage, and I was hopeful (no, actually assuming) that the morning haze would “burn off” as it had for the previous days that week. So, we took off, dodged clouds, circled around Galena a few times, then had trouble finding the Dubuque airport because of low visibility. We had poor visibility during the return flight, though navigation was okay because I had good VOR coverage and a GPS system, and I never lost sight of the ground. As we arrived back at DuPage about two hours after departing, and I called for the ATIS report, the visibility had decreased to four miles! Since the minimum for flying under Visual Flight Rules (VFR) is three miles, my approach and landing were barely legal.

Only five days later, we took a short trip to Illinois Valley airport (VYS) near Peru, Illinois, which is just over fifty miles away. I wanted to show my wife what flying at night is like. We flew to our destination just before dusk, borrowed a courtesy car and ate dinner at a nearby restaurant. Then we returned to our aircraft just after dark.

When we left VYS, the reported ceiling at DPA was 4600 feet, and I expected an uneventful flight. However, shortly

About the author

Doug Horton had some Navy flight indoctrination at Pensacola, but he spent 12 years of active duty in nuclear submarines, with over 10,000 hours underwater. Since then, he has spent nearly 25 years in corporate and consulting jobs related to business management and technology, logging over a million miles as a commercial air passenger. During 10 years of flight simulation experience, he has been a frequent beta tester and writer. In the past year, he has completed Private Pilot certification and an Instrument Rating – unfinished business from an enjoyable month with “Navy Air” many years ago.

before landing, another pilot checking in with DuPage Tower reported that he was flying through some thin clouds as he approached. Tower asked me if I could see the airport, and I responded that I’d seen the airport at least ten miles out. No sooner had I made this report, than I too was seeing thin clouds slightly obscuring my view of the airport, and I reported this observation to the Tower. The controller asked if I had the active runway in sight, and I reported “yes.” After that, I was able to keep the runway lights in sight and complete the landing. However, immediately after getting to our car and retrieving my mobile phone, I called the airport’s automated weather line. It reported an 800-foot ceiling, which is below VFR minimum. The weather had closed in no more than 15 minutes after we landed!

As I write this and following articles, I’ve now completed getting my instrument rating, and I wish to share an afterthought. At the beginning of my instrument training, I thought I knew a lot about instrument flying and air traffic control from 10 years of computer flight simulator flying and in particular, simulated flying under ATC with Flight Shop, the ProFlight series, SATCO, Fly!, and Flight Unlimited. Also, I’d listened for several years to real ATC dialog on United Airlines flights, as the pilots usually make it available on one of the audio entertainment channels. In retrospect, I did know much of the fundamentals, and I knew most of the vocabulary, though there was still a great deal to learn. I thought that getting my instrument rating would be the “frosting on the cake” after getting my Private Pilot certification. Instead, completing Private Pilot was just the plate. The instrument rating is the cake! Continuing to gain flying experience and knowledge will be the frosting.

FAA Written Exam

Throughout the five months I spent on instrument training, I studied an extensive textbook by Trevor Thom to learn about instrument flying and to prepare for the required written exam, which is more officially called the “knowledge test.” I mention this at the outset because I spent time working through the text and studying for the exam that I should have spent sooner. As a result, I learned and practiced many of my airborne instrument flight training exercises before my knowledge was complete from reading the text.

Flying was certainly more interesting than reading, but toward the end of my training, my instructor indicated I was ready for the required practical test (checkride) before I had finished studying and taken the written exam. In contrast, my initial instructor for Private Pilot required that I pass the written test *before* I began flight lessons. The ideal is probably in the middle, but I should have paid more attention to studying the textbook and getting ready for the written exam sooner, then taken the exam at least halfway through the airborne instruction.

As I mentioned during the three-part series of Flight Simulator World articles on getting my Private Pilot certificate, the questions for all exams are made available

Instrument Rating Requirements

The requirements for an instrument rating in the United States are contained in the Federal Aviation Regulations Part 61.65:

(a) General. A person who applies for an instrument rating must:

(1) Hold at least a current private pilot certificate with an airplane, helicopter, or powered-lift rating appropriate to the instrument rating sought;

(2) Be able to read, speak, write, and understand the English language. If the applicant is unable to meet any of these requirements due to a medical condition, the Administrator may place such operating limitations on the applicant's pilot certificate as are necessary for the safe operation of the aircraft;

(3) Receive and log ground training from an authorized instructor or accomplish a home-study course of training on the aeronautical knowledge areas of paragraph (b) of this section that apply to the instrument rating sought;

(4) Receive a logbook or training record endorsement from an authorized instructor certifying that the person is prepared to take the required knowledge test;

(5) Receive and log training on the areas of operation of paragraph (c) of this section from an authorized instructor in an aircraft flight simulator, or flight training device that represents an airplane, helicopter or powered-lift appropriate to the instrument rating sought;

(6) Receive a logbook or training record endorsement from an authorized instructor certifying that the person is prepared to take the required practical test;

(7) Pass the required knowledge test on the aeronautical knowledge areas of paragraph (b) of this section; however, an applicant is not required to take another knowledge test when that person already holds an instrument rating; and

(8) Pass the required practical test on the areas of operation in paragraph (c) of this section in:

(i) An airplane, helicopter, or powered-lift appropriate to the rating sought; or

(ii) A flight simulator or a flight training device appropriate to the rating sought and approved for the specific maneuver or procedure performed. If an approved flight training device is used for the practical test, the instrument approach procedures conducted in that flight training device are limited to one precision and one non-precision approach, provided the flight training device is approved for the procedure performed.

(b) Aeronautical knowledge. A person who applies for an instrument rating must have received and logged ground training from an authorized instructor or accomplished a home-study course on the following aeronautical knowledge areas that apply to the instrument rating sought:

(1) Federal Aviation Regulations of this chapter that apply to flight operations under IFR;

(2) Appropriate information that applies to flight operations under IFR in the "Aeronautical Information Manual;"

(3) Air traffic control system and procedures for instrument flight operations;

(4) IFR navigation and approaches by use of navigation systems;

(5) Use of IFR en route and instrument approach procedure charts;

(6) Procurement and use of aviation weather reports and forecasts and the elements of forecasting weather trends based on that information and personal observation of weather conditions;

(7) Safe and efficient operation of aircraft under instrument flight rules and conditions;

(8) Recognition of critical weather situations and windshear avoidance;

(9) Aeronautical decision making and judgment; and

(10) Crew resource management, including crew communication and coordination.

(c) Flight proficiency. A person who applies for an instrument rating must receive and log training from an authorized instructor in an aircraft, or in a flight simulator or flight training device, in accordance with paragraph (e) of this section, that includes the following areas of operation:

(1) Preflight preparation;

(2) Preflight procedures;

(3) Air traffic control clearances and procedures;

(4) Flight by reference to instruments;

(5) Navigation systems;

(6) Instrument approach procedures;

(7) Emergency operations; and

(8) Postflight procedures.

(d) Aeronautical experience. A person who applies for an instrument rating must have logged the following:

(1) At least 50 hours of cross-country flight time as pilot in command, of which at least 10 hours must be in airplanes for an instrument-airplane rating; and

(2) A total of 40 hours of actual or simulated instrument time on the areas of operation of this section, to include:

(i) At least 15 hours of instrument flight training from an authorized instructor in the aircraft category for which the instrument rating is sought;

(ii) At least 3 hours of instrument training that is appropriate to the instrument rating sought from an authorized instructor in preparation for the practical test within the 60 days preceding the date of the test;

(iii) For an instrument airplane rating, instrument training on cross-country flight procedures specific to airplanes that includes at least one cross-country flight in an airplane that is performed under IFR, and consists of:

(A) A distance of at least 250 nautical miles along airways or ATC-directed routing;

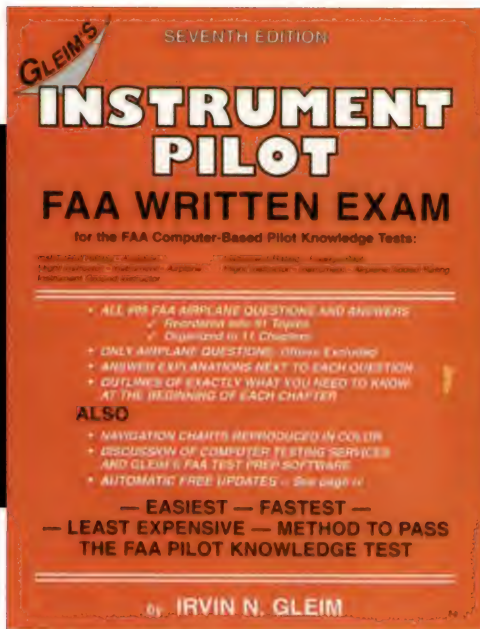
(B) An instrument approach at each airport; and

(C) Three different kinds of approaches with the use of navigation systems;

(e) Use of flight simulators or flight training devices. If the instrument training was provided by an authorized instructor in a flight simulator or a flight training device:

(1) A maximum of 30 hours may be performed in that flight simulator or flight training device if the training was accomplished in accordance with Part 142 of this chapter; or

(2) A maximum of 20 hours may be performed in that flight simulator or flight training device if the training was not accomplished in accordance with Part 142 of this chapter.



(far left) This is the "red book" study guide I used to work through all 899 FAA instrument questions.

(left) Here is the text I used to learn about instrument flying and prepare for the written exam.

by the FAA, so thorough preparation for the test includes working through all 899 questions in the question "bank." During the actual exam, which is administered by computer at most flight schools and many other facilities, 60 questions are randomly chosen to cover all topic areas. I used the familiar "red book" published by real pilot Dr. Irwin Gleim. This book is organized by knowledge areas and for each area, there is a summary of the information covered by the questions in that section.

The information summaries are followed by the FAA questions that pertain to each area. Each question has three multiple-choice answers and descriptions for each choice that explain why the choice is correct or incorrect. It's impossible to memorize the questions and answers, but it helps to know what kinds of questions are asked. Also, the flight planning area of questions includes many types of calculations and use of instrument flight charts, and it helps a great deal to have worked through all the sample flight planning questions.

The minimum passing grade for the written exam is 70 percent correct, but it seems that no one wants to just pass, for two reasons. First, it's important to really know as much as possible, because you will likely need the knowledge for subsequent instrument flying. Second, I think that the oral part of the practical test goes better if you've done well on the written exam.

Initial Instrument Training

The first stage of typical training for an instrument rating is called "attitude instrument flying." While this term is not completely intuitive, it implies using the instruments to place and maintain the aircraft in the proper attitude (pitch, bank, and airspeed) to perform the desired task, including straight and level, straight climbs and descents, level turns, and climbing turns and descents. The accepted approach

to attitude instrument flying is to scan the instruments, interpret the instrument indications, including trends and then act. And importantly, these steps must be done continuously and repeatedly.

During instrument training, pilots use a "view-limiting device." As there is no required FAA approval, you can use many available products. Originally, pilots wore a hood-like device that is best described as a something like a welder's mask, tapered outward to obscure all vision except of the panel directly in front of the pilot, as shown in the photo. Because of the design of this device, instrument pilots continue to use the term "flying under the hood" to describe instrument flight training while using a view-limiting device. Another photo shows the device I used, with a brand name of Foggles.



Classic view-limiting "hood" device.

Developing an effective instrument scan is most important, because when flying on instruments only, the pilot must ignore the physical suggestions of his or her body ("seat of the pants," inner ear, etc.) in terms of what the aircraft's attitude and flight condition is. Instead, the pilot must rely solely on instrument indications. There are many

accepted scan patterns of the main flight instruments, such as radial and circular scans. In all cases, the Attitude Indicator is "home base" for the scan.

For example, the typical radial scan is

- ❖ Attitude indicator
- ❖ Altimeter
- ❖ Back to Attitude indicator
- ❖ Vertical Speed indicator
- ❖ Back to attitude indicator
- ❖ Heading indicator, Directional Gyro (DG) or Horizontal Situation Indicator (HSI)
- ❖ Back to attitude indicator
- ❖ Turn Coordinator
- ❖ Back to attitude indicator
- ❖ Airspeed indicator
- ❖ Back to attitude indicator.

The scan must identify values on these instruments, and if there is perceptible motion of the instruments, the scan must reveal trends, such as increasing altitude or airspeed. The circular scan begins with the Attitude Indicator and progresses clockwise around the "big six" instruments back to the Attitude Indicator, and some pilots would argue that you must keep a peripheral eye on the Attitude Indicator during the circular scan. There are other scans that can be used when turning or climbing for example, which don't ignore any of the instruments, but which focus more on the instruments that should be indicating changes during particular maneuvers.

There is no "right way" to scan; but whatever pattern is used, the key is to sense what the instruments are indicating. This is the interpretation step, in which the pilot must identify what the individual and collective instruments indicate. Importantly, the pilot must also be on the lookout for inconsistent indications that might be caused by instrument failures.

A failure of the attitude indicator, for example, will likely cause the instrument to indicate a climbing or descending turn. This failure can be verified if the remaining instruments don't agree, such as the heading indicator and turn coordinator not indicating a turn, and the altimeter, vertical speed indicator, and airspeed indicator not indicating a climb or descent.

The third step of attitude instrument flying is taking control action based on the instrument scan and its interpretation. For straight and level flying, for example, this would be small correction of pitch or bank to maintain altitude and heading, respectively. During a turning right climb, as another

example, you initiate the climb by pitching up and simultaneously initiate the turn by banking right. While initially you monitor the AI to see the pitch and bank changes. You would also look for indications of the climb on the airspeed indicator (decreasing), altimeter (increasing), and vertical speed indicator (positive rate); and you would see indications of the right turn on the heading indicator and turn coordinator.

In this case, all of the "Big 6" instruments would show indications of the climbing turn, and the scan must interpret the indications of all six for consistency with the intended maneuver. And not just that they indicate the aircraft climbing and turning, but that they indicate climbing and turning at appropriate rates. By the way, in the case of a climb, you would probably also increase the throttle setting, monitoring this action on the tachometer or manifold pressure gauge, as well as the airspeed indicator.

Next Issue...

In the next issue, I'll describe how used the instrument lessons in FS 2000 as part of my training, and I'll explain how I learned and practiced instrument flight maneuvers "under the hood," such as steep turns, unusual attitudes, instrument approaches, and holds.



The "radial scan" includes the Attitude Indicator as its home base, with alternating looks at the Altimeter, Vertical Speed Indicator, Heading Indicator, Turn Coordinator, and Airspeed Indicator.

An Interview With Third Wire Product's Third Wire Product's

Interviewed by Rod White

I had an opportunity to talk with Tsuyoshi Kawahito of Third Wire Products on the topic of their new 60s-era plane-based combat simulation, simply titled "Project 1". It will be a multi-faceted flight simulation game that features the McDonnell Douglas F-4 Phantom II, and other vintage combat aircraft. And from what I have seen, this one will rock! Tsuyoshi is the guy responsible for the Jane's Longbow series and Microprose's European Air War!

This will be a traditional combat flight-simulation, set in the 1960's, and will feature a dynamic campaign, set in a fictional background, spanning the entire decade. In addition to the F-4 Phantom II, you will have an opportunity to fly the F-100 Super Sabre, the sleek F-104 Starfighter, and the A-4 Skyhawk. During the campaign you will be dogfighting with MiG-21s and dodging radar-guided SAMs!

The simulation will also features Instant Action and Single Mission modes of play, and will allow you to design custom missions. There are also plans on supporting user created 3rd party modifications, including user-created missions, campaigns, maps, and aircraft.

I asked TK a number of questions regarding this exciting new simulator.

FSW: First off, please fill us in on your past achievements. Who did you work for in the past, and what titles did you work on?

TK: The last simulation game I've worked on is the European Air War, by MicroProse Software. And before that, I was with EA/Origin and worked on Jane's Longbow 2, Jane's Flashpoint Korea, and Jane's AH-64D Longbow.

FSW: When did you form Third Wire, and how many other core developers make up the company?

TK: The company was formed almost two years ago, and we've worked on various projects and contract jobs since then. We are currently focused on our own project, called "Project 1". We have four very talented and dedicated people working it.

FSW: Tell us a little about this new military combat simulation, and what planes will it offer?

TK: "Project 1" is a jet combat flight-simulation game set in the 1960s, when aviation technology was still primitive, but advancing at a rapid

pace. It allows the player to take control of a sleek and sexy jet fighter and engage in classic WWII-style dog-fighting and mud-moving. The current list of player flyable planes include F-100 Super Sabre, F-104 Starfighter, A-4 Skyhawk, and of course, F-4 Phantom II.

FSW: So will players be able to fly the 60s-era MiG adversaries as well?

TK: No, MiGs will not be flyable on the initial release. It will most likely be made flyable post-release, either through an official add-on, or through some user-created modifications.

FSW: Are you guys aiming for hardcore realism, like F-15 and Flanker 2.0? Or will this be more along the lines of accessibility for all, like Jane's USAF, Gunship, etc.?

TK: We are aiming for something in closer to Jane's USAF than Jane's F-15 out the box.

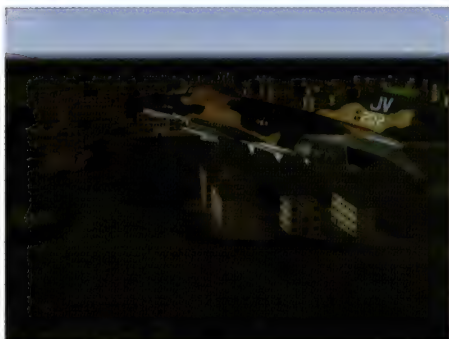


FSW: *How in-depth are you modeling the planes from within the cockpit? Will we see the ability to flip switches and turn dials via the mouse, and how much of a pilot workload can the player choose to undertake?*

TK: We do have detailed 3D cockpit for each player aircraft, but we currently have no plan to make them clickable via mouse. The focus of the game is on combat, not necessary on flight itself, so the pilot workload will be simplified to a point where single player can effectively fly and fight in a two-seater (i.e., F-4 Phantom). You won't need to know the checklist for starting your engine or anything like that.

FSW: *Being that this is a simulation utilizing 60s-era aircraft, would it be safe to assume that this is a Vietnam era simulation, or will it be a "What If" type of scenario where anything goes?*

TK: Actually, the "Project 1" is not set in Vietnam. We just don't believe that a politically driven limited-scale war could provide the kind of "fun" gameplay we are looking for. So instead, we are creating a completely fictional campaign set in a fictional world, where we are free to create more dynamic mission environment. This also makes it easier to incorporate all the user-created aircraft into the campaign without any of the limitation that would be imposed by historical order of battle.



FSW: *Graphically speaking, from the images we've seen so far it looks like an outstanding project, that appears to use all of the bells and whistles in Direct 3D. Could you tell us about the graphics engine at work in the simulation? What can we expect in terms of imagery and*

terrain generation? Will there be some Hollywood-like explosions and effects to look forward too as well?

TK: Thanks for the compliment! The graphics engine is designed to use the latest in Direct3D, and it is optimized for rendering scenes with high-poly count with 32-bit color. Each of the player aircraft has over 5,000 polygons, and even non-player planes and even ground objects use relatively high poly models as well. The terrain engine can seamlessly integrate satellite digital elevation map (DEM) data and fractally generated detail data. It is capable of creating terrain that is both visually stunning and realistic at all altitude level. And of course, we have fantastic looking explosions and effects as well, all done with particle system and dynamic light sourcing.



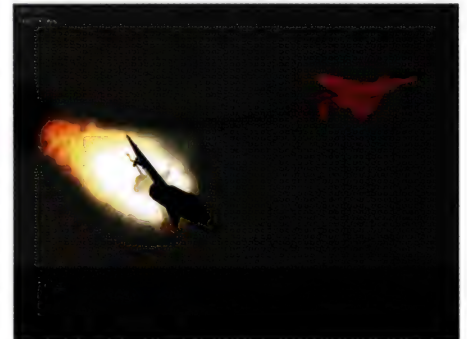
FSW: *In terms of realistic flight modeling, just how down and dirty will you guys get? Can we see any effect of fuel usage switching the center of gravity, ordnance under the wings affecting the performance, etc?*

TK: We do have a sophisticated flight model coded in, how realistic it will be depends on the quality of data put into it. Yes, fuel and ammo usage will affect the center of gravity, and ordnance will affect the performance.

FSW: *In the realm of weapons and such, how much authenticity will we see in weapons delivery, as the 60s era-missiles weren't the most reliable air-to-air projectiles ever deployed?*

TK: All the weapons will be realistically modeled, down to their unreliability. This is a deliberate design choice - we wanted the guns

and iron-bombs to be the primary weapons of choice. We feel that a close-quarter gun combat is much more satisfying and "fun" than a long-range missile combat.



FSW: *Napalm is another weapon commonly used in the 60s that flight simulation enthusiasts can never get enough of, will we be able to drop it in the simulation, and will it look as devastating visually as it really was?*

TK: Yes, Napalm is one of the weapons we'll have in the game. We don't have the visuals for it in the game yet, so I can't say how it'll look for sure, but we do hope to make it look "devastating."

FSW: *Since the game is set in a fictional world, in a fictional place in time, what kind of region will the action take place in? Will we have a variety of different hot spots to fly missions over, or is the simulation contained to one specific type of region (jungle, deserts, sea, etc)?*

TK: We have one fictional map that contains variety of terrain types. It has an ocean to the north, desert to the west, mountain and canyons to the south, and urban/farm fields to the east, for example.



FSW: In terms of gameplay options, what will the simulation have to offer, and in the campaign mode what have you whipped up to keep it interesting and to add replay value?

TK: We'll have a dynamic campaign set in a fictional background. The campaign will span the entire decade of aviation history, so players will have ample opportunities to "discover" new technologies throughout the campaign. Initially, the player will start out with F-100 - a simple aircraft with no radar and no missiles. Slowly but surely, better planes will be introduced, avionics will be improved, and the threats will become deadlier. And at the end of the campaign, the player will be flying the sophisticated F-4 exchanging guided missiles with MiG-21 while dodging radar-guided SAMs!

The campaign can be played normally, where the player takes on a role of an air force pilot. Or the player may also take on a role of a mercenary pilot. This adds another dimension to the gameplay by allowing the player to build up his pilot's abilities, resources and finances. He or she can earn money for target destruction and mission accomplishment, and the profits can be used to buy ammo and fuel, fix battle damages, upgrade the aircraft, or buy bigger and better weapons. We hope this little element of role-playing will add incentive for the player to fly that next mission and keep playing the game.

FSW: In the way of multiplayer options what will be offered?

TK: We are not ready to discuss the details of the multiplayer plans at this point.

FSW: When do you foresee completion of "Project 1", and what system requirements are you aiming for with the simulation?

TK: It is a bit too early to say for sure, but the target specs we are shooting for is somewhere around PII-400 with a good 3D card. Of course, we are planning to include various options, and that'll be for running the game at the lowest graphics setting. The recommended system will be higher, probably around PIII-650 with a GeForce2 or better card.

FSW: Thanks a lot for your time TK and we look forward to hearing from you again as the project matures!

TK: Thank you for the opportunity; it was my pleasure.



You can find out more about Third Wire on their Web site (<http://www.thirdwire.com>)



Top 5

Essential Simulation Enhancements

As brutal as this may seem, most combat flight simulation titles have a fairly limited replay value. Sure dynamic campaigns are great fun, and they certainly do give you something different to take on time and again. But there is a certain degree of limitation even with most dynamically generated missions, because you lose the ability to face some fantastic scripted events that are only found in most scripted missions.

A simulation like Falcon 4.0 right out of the box only gives you the means to fly the F-16. Jane's F/A-18 only lets you fly an F/A-18 Super Hornet the way they painted it. And in a simulation like European Air War, you're limited to the missions and planes that the developers made available to you.

Sure the Microsoft civilian and combat flight simulations have always been open-ended, leaving the way for third party developers and enthusiasts to create their own scenery, planes and missions. But only recently has this started to rub off onto the combat flight simulation enthusiast genre. The usual problem is that the developers don't want to give you the means to create your own missions, planes or all new environments, because that limits them from getting more money from you with their own.

Today some combat simulation developers are being a little more reasonable, as a few have taken it upon themselves (in their spare time no less!) to extend the life of their combat/flight simulation products. A good number of enthusiasts are also getting keener and have figured out on their own how to add a little more something to their favorite titles.

So chances are if there are few different MODS (modifications) out there to download for the combat flight simulation that you fancy. Since there are so many MODS out there I decided to feature my top 5 favorites. A complete listing of the download links can be found at the bottom of the article. Here goes...

Number 5. Valhalla Campaign for Jane's F/A-18

Matt Wagner, former designer of Jane's F/A-18, and who now works for SSI on the Flanker line of products, created a whole new campaign in his spare time for F/A-18. It's a free download to anyone with Jane's F/A-18! It's called Valhalla Campaign and is about an 18MB download. So if you're looking for more missions after having completed the original campaign that shipped with the product, this is definitely a *must-have* download. The campaign is available for free at the SimHQ.com download section.

http://www.simhq.com/simhq3/sims/downloads/jf18/valhalla_campaign_beta.zip

Number 4. Realism Patch v4.1 for Falcon 4.0

Falcon 4.0 has a huge following online, and you can find a bunch of enhancements and add-ons for free on the Internet for it. After the Microprose team abandoned the product, a group of die-hard Falcon 4.0 enthusiasts dug into the code. They figured out a way to further enhance the simulation by adding more realism, fixing some bugs, and all around making it a better product.

More recently the Realism Patch Group have released a version 4.1 realism patch, which modifies the flight models of many of the US/NATO aircraft in the game, in addition to many other things. If you dig around a bit too you'll also find a nice patch that lets you fly any plane in Falcon 4.0.

<http://rpg.falcon40.com/>

Number 3. Ron Nair's Viperware skins for Falcon 4.0

Here's another absolutely outstanding bunch of add-ons from Ron Nair's Viperware site. These are just amazing paint schemes that you can download and use in Falcon 4.0. Some of my favorites are the Jolly Rogers F-14 Tomcat, the various MiG-29 skins, and F-16 Wild Weasel and Nellis Aggressor skins. The attention to detail is outstanding, and it shows that this guy loves Falcon 4.0 and has no problem sharing his love for the simulation with everyone. So a big thank you goes out to Ron and work he has done on these skins, and the number of skins that he has to offer at his site.



<http://viperwear.falcon40.com/>

Number 2. Enemy Coast Ahead for European Air War

European Air War is still considered by many “the ultimate WWII combat/flight simulation”. That being the case, the following for EAW is still large. Due to this fact, there are many diehard enthusiasts out there working on ways of extending its life even further. One such enthusiast named Charles Gunst took EAW to the next level with Enemy Coast Ahead; an add-on that brings many new planes, art, and missions to EAW.

Flyable versions of the De Havilland Mosquito VI, Martin B26B Marauder, ME-410 Hornisse, Junkers Ju-88A, Junkers Ju-88C, Junkers Ju-87B Stuka and Heinkel He-111 H are available with this outstanding add-on. All new Air-to-Ground weapons are also part of the package:

- ❖ Henschel Hs-293 anti-ship rocket-bomb (250 kg warhead)
- ❖ Ruhrstahl Fritz-X anti-ship missiles (800 kg warhead)
- ❖ Rheinmetall Panzerschreck anti-tank rockets (54mm, 10 kg warhead)
- ❖ SD-2 “Butterfly Bombs” canister (250 kg, containing 96 x 2 kg fragmentation bomblets)
- ❖ 50-gallon (500-lb.) napalm bombs.

This is a great add-on for EAW that you shouldn't overlook.

<http://www.geocities.com/weurger/main.htm>

Some Other Favorites

Although I picked my top 5 favorites, I'd like to include a few others that are definitely worthy of mention.

If you're into Flanker 2.0 then you absolutely must check out Roald Julin's Enhanced Terrain for Flanker 2.0 (<http://dl.fileplanet.com/dl/dl.asp?3DActionPlanet/flightsims/flankterrain.zip>). It really does make an already pretty combat simulation that much prettier.

Activision's Fighter Squadron: Screamin' Demons Over Europe (<http://www.fightersquadron.com>) also has a following online and you can find all kinds of great planes and even WWI and Pacific terrain to download for it as well over at Fighter Squadron.com.

The bottom line is, if you have a favorite combat/flight simulation, chances are there's a bunch of great add-ons and MODS out there for it. All you need to do is dig around a little online. Actually there are already add-ons for the just released Battle of Britain out there. So if it's new or old, there is a good chance that there are a few downloads out there waiting for you, to further enhance your gaming experience.



At Activision's Fighter Squadron: Screamin' Demons Over Europe (<http://www.fightersquadron.com>) you can find all kinds of great planes and even WWI and Pacific terrain to download for it as well over at Fighter Squadron.com.

Number 1. Pacific Tide for European Air War

This is by far the coolest MOD yet. The combat/flight simulation community has screamed for a good Pacific war simulations for years, and what they've really wanted was a sequel to Microprose's Pacific Air War, which came out many years before 1998's European Air War.

Pacific Tide uses a bunch of other little add-ons to pull it all off, and there's a list of what you need at the Favorite Flight Sim Stuff page at 3D-Actionplanet. Pacific Tide uses Enemy Coast Ahead, the Enemy Coast Ahead control panel application and a wide variety of the best user created planes that are available for EAW.

So just what does this package offer? They've done a great job by including a variety of pacific themed screens, which replaced the original interface art from EAW. Also included is a new game map, which replaces the European theater map, and all new squadron names and histories.

The Japanese in-flight speech is another plus, and as far as gameplay goes there's an all-new 1942 Guadalcanal Campaign for US and Japanese pilots! As the authors claim, installation is foolproof. Just follow the step-by-step instructions that are included. As a bonus you make a separate install of EAW for Pacific Tide, so you don't have to mess up your current EAW install to make Pacific Tide work!

<http://www.3dactionplanet.com/flightsims/>

This Top 5 Essential Simulation Enhancements was compiled by Rod White

Legends of Aviation Series

PBY Catalina



Among the unsung heroes of the sky in World War II. This venerable aircraft often flew reconnaissance over the inbound attacks. Once spotted, the locations of the advancing an immediate intercept was planned. The Catalina also served in performed small bombing raids. The Legends of Aviation Series pays tribute to these monuments of aviation.

In this package, the development team of Ascendace proudly brings you the PBY-5A Catalina and lets you take control of three beautiful versions of the precious water bird in Microsoft's Combat Flight Simulator 2 and Flight Simulator 2000. Take the controls of the Catalina and fly two U.S. Navy versions and the civilian *Princess of the Stars*. You'll sit in the same seat as some of the hero pilots of World War II.

In addition to the flyable floatplanes, you'll find an extensive history of the plane, a historical video, the original 1945 checklist and an authentic photo album of the PBY and its crew in action.

The three versions of the Catalina come in a "Classic" and "Boat" version for FS2000. Use the Classic version to take off from an airbase to land on

were the pilots of the infamous PBY Catalina. Pacific Ocean in search of enemy fleets and enemy were reported to the ground and search and rescue missions and



1-55755-441-2 \$29.95 Requires Flight Simulator 2000 or Combat Flight Simulator 2

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New PC Audio Technology

By Rod White

When most people think of Philips, they think of semiconductors, light bulbs or those commercials with teenage kids making their favorite music compilations with Philips CD-burners. In reality, Philips is a very huge global company, so they pretty much offer a lot of various types of products, to various markets. But right now, they're making a push into the PC peripherals market with some of their latest technology.

Philips (www.philipsusa.philips.com) isn't new to the PC peripherals market either, as they've been making speakers and other devices like web-cams for years now. A little known fact is that those black USB Microsoft speakers from a few years back were actually Philips speakers with a Microsoft name stenciled on them. At that time, they completely rocked as USB or regular sound card speakers.

Philips Seismic Edge Soundcards

In one of our last articles on soundcards and speakers, we took an in-depth look at Philips Acoustic Edge 5.1 soundcard. The Acoustic Edge is Philips top of the line offering, but they also have two other new soundcards, filling the low-end and mid-range spectrum. The Seismic Edge and the Rhythmic Edge. The Rhythmic Edge is their \$50 (\$40-\$50 street price) low-end card. The Seismic Edge is just one small step down from the Acoustic Edge 5.1 at only \$80 (\$70-\$80 street price).

These new cards also use a Thunderbird DSP (Digital Signal Processor) that drives the sound output. The

one embedded on this card is called the Thunderbird Q3D DSP. Features include:

- ▲ Digital acceleration of 64 streams of 3-D audio acceleration including
- ▲ Position reverb
- ▲ 128 streams of DirectSound accelerations and digital mixing,
- ▲ Full-duplex, 48khz digital recording and playback
- ▲ 64 hardware sample rate conversion channels up to 48khz
- ▲ Wave table and FM Synthesis
- ▲ DirectInput devices
- ▲ up to 576 total wave table synthesis voices
- ▲ Reverb and chorus effects
- ▲ 64 channel hardware CD quality (16 bit, 44.1khz) wave table synthesizer with 5.9MB sample set
- ▲ Hardware FM Synthesizer (in real mode DOS)
- ▲ 512 voice professional quality soft-synth with XG and GM compatibility.

The algorithms employed include:

- ▲ QSound3DInteractive^{MT} positional 3-D for 2 speakers

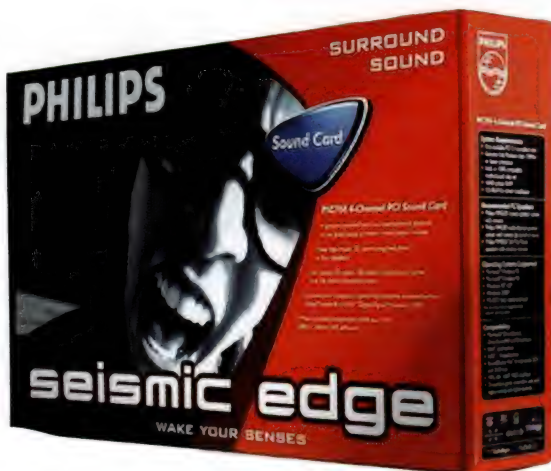


The Klipsch Pro Media 4.1 Speaker System

- ▲ 4 speakers or headphones
- ▲ QSound Multi Speaker System^{MT} for quadrasonic output of stereo music, video and games
- ▲ QSound Environmental Modeling for EAX^{MT} and DirectSound3D^{MT} games and QXpander^{MT} and "2D to 3-D remapping" for 3-D enhancement of stereo playback.

There is EAX compatibility for EAX games, and additionally, there is compatibility for A3D 1.0 as well. The card also does a fine job of taking a 2D stereo source and making it 3D, as well as pumping 2D and 3D audio out to all four speakers (if you're using a four-speaker setup).

While the card doesn't offer 5.1 decoding, it does get by nicely with a little DSP trickery, as the Seismic Edge does offer Stereo and Prologic Movie/Video Playback in Quadrasonic Quad Playback of DVD using Dolby Digital Downmix, and Enhanced DVD Playback using QMSS. Therefore, while you're not getting the full effect of Dolby Digital 5.1, you're still able to



The Philips Seismic Edge Soundcards

a nice set of quad speakers and a sub woofer.

For flight simulations and gaming the card fared well. In titles like Battle of Britain, Combat Flight Simulator 2, FS 2000, Mechwarrior 4 and many other recent games and simulations the sound quality was great. With two or four speakers, the sound surrounds me

quality (2 minutes per MB) or at full CD quality (1 minute per MB).

Another cool feature is the ability to link a digital image to a specific MP3 file with the free AudioPix software that they tossed in as well. By using it, you can create little slide shows of photos combined with MP3 music files. While it's not the kind of thing I can see myself doing on the PC in my spare time, nonetheless it's a nice value added plus to the overall package.

In addition to all that the new Philips cards feature the usual two audio outputs for output 1 and output 2 for quad speaker systems with a sub, a mic in, line in, a gameport and internal headers for CD audio and auxiliary internal inputs.

Philips is definitely taking the PC peripherals market by storm with these new audio cards. The Seismic Edge is every bit as awesome as the Acoustic Edge 5.1 that we reviewed a few issues back, minus the Dolby Digital 5.1 support. But let's face it, not everyone

Another cool feature is the ability to link a digital image to a specific MP3 file with the free AudioPix software that they tossed in as well. By using it, you can create little slide shows of photos combined with MP3 music files.

enjoy DVDs and other forms of programming with great four-speaker sound, which is usually more than enough for most PC enthusiasts.

I'm a movie nut and I can't stand watching and listening to a DVD on almost any PC, even one with the best Dolby Digital 5.1 setup around and a 21-inch monitor. There is just nothing better than my 32-inch Sony TV and its multimedia setup. But everyone does not have the room for that kind of setup, not to mention understanding neighbors. So I can understand how someone could manage to get by with a setup like this when combined with

as it should. Additionally, with MP3 music files and CDs the card also sounded great, and the card comes with an application called SIREN XPress. This program lets you record CDs and other music straight to your hard drive, download and save songs at near CD-

wants or needs Dolby Digital 5.1. In the end most gaming and flight simulation enthusiasts care more about hearing what they're playing than hearing Rocky smacking Apollo Creed around in 5.1 Dolby Digital. And even when watching movies, the Seismic Edge does a fine job at recreating the experience with just 2 or 4 speaker setups. So if you're looking for a replacement for a less capable ISA or PCI sound card, the Seismic is unquestionably a fine candidate for job.



The Philips MMS205 Speaker System

Philips MMS205 Speaker System

In the way of speaker systems, Philips (www.philipsusa.philips.com) also has a nice, yet small four-speaker and sub woofer system to offer. If you don't have a lot of space to give up for the average quad-speaker system then you may like what Philips has to offer in the way of the MMS205 system.

In terms of power output it's no roaring lion, because the output is 4 x 6 watts + 20 watts for the sub woofer. Other specs include 4 satellites each with what they call a 2.5" Squeeter, a subwoofer with a 4" woofer, frequency Range of 40 - 20kHz, all of the speakers are magnetically shielded and the sub is based on the bass reflex design. Also included is a neat little tethered remote control device. On this device you'll find controls for power, main volume, surround volume and a button labeled "Incredible Surround."

Installation is simple, as all of the connections need to be made to the rear of the sub-woofer unit. An additional line-in is provided for a second sound source like a portable CD player or video game system.

The system produces a good rich sound quality, however the lack of separate bass and treble controls is a little disappointing, as at times it would have been nice to adjust each. The "Incredible Surround" button activates a pseudo surround sound field if you will, and they recommend using it with a sound card that supports quad-speakers. The hardware spatial-like sound effect that it produced was neat too.

Titles like Combat Flight Simulator 2, when firing guns and cannons, really put this system to the test. The bass was defined well, but misses some of the punch we're used to hearing from systems that cost a little more, with much better sub woofer designs. However, the highs were nice and crisp, and in most cases MP3 files and CDs sounded good until you started to push the volume to its limit, and then the little satellites will start to break up a bit.

This system originally debuted for about \$80, and at that price it's bested by other speaker systems in the same price range. However, the MMS205 system can be found for \$65-\$75 now if you shop around, making it a nice solution for those looking for a four-speaker system with a sub that have limited space to house such a system. Also this little system is ideal for apartment dwellers and those who are afraid of disturbing the neighbors, because at normal listening volume this system sounds good when combined with a good four channel sound card like Philips own Seismic Edge, or a Creative Labs SoundBlaster Live! Value.

My only other gripes would be the lack of treble and bass control, and having the headphone jack in a place where it's hard to get to, but at least the system features a headphone jack.

While the MMS205 isn't the ideal system for the extremely hardcore gaming or simulation enthusiast, it's adequate and offers decent sound quality, not to mention it's a four-speaker system for well under \$100, and has a

remote. It's an average speaker system, which is far better than most of the give-away speaker systems that come with PCs, and can be had for a bargain price if you shop around.

Klipsch Pro Media 4.1 Speaker System

A few issues ago we were completely overwhelmed by the speakers that Klipsch (<http://www.Klipsch.com/>) had to offer. After all they've been making high-end speaker systems for over 50-years, and when they decided to go after the PC market they took the time to do it right. Quite honestly, I didn't think anyone, not even Klipsch, could outdo the Pro Media v2.400 system. Well, I was wrong.

The Pro Media 4.1 system is essentially a revamping of the v.2 400s. While at a glance this may look like the V2. 400 system, it's not. Under the hood, there are many major improvements to be found. First off, there is a speaker on/off indicator, so when in use you can tell that the speakers are on indicated by the light illuminated green, when they're off the light turns red. A feature borrowed from their 2.1 system is the headphone jack and MP3/Auxiliary jack that's built into the master satellite, which also features the controls for the system.

Klipsch also reworked the crossover network, so now the satellites offer much richer mid-range reproduction and imaging. This doesn't just benefit gaming sound, as it helps to offer much richer music reproduction too over the previous V2.400 system as well. While the subwoofer enclosure stays the same as the one from the V2.400, and houses two 6 1/2" drivers in a ported wooden cabinet, the crossover in it has also been updated. Therefore, the bass this set produces is also a major improvement over the last system (and keep in mind the V2.400s offered outstanding bass!). Additionally, the improved amplifier performance offers much better channel separation, lower crosstalk, and further optimized compression circuitry, thus much better sound altogether.

You just can't get a better speaker system than this one. This is truly the cream of the crop in four-speaker with a sub woofer speaker systems. Not only does it offer a blistering 400-watts of power (and believe me it sure sounds like it too, and is not some tricky marketing numbers game), and produces the best sound in the industry, but it's also a THX certified setup. It does an outstanding job at reproducing movie soundtracks from DVD and other audio sources. This is the kind of system that will literally wake the neighbors is you decide to make a bombing run at 2AM over Baghdad in Jane's F-15.

So take everything that made the V2.400s king and add all of the improvements listed in this article and you get the Pro Media 4.1 system. Its cost of around \$300 means it's not for everyone. But it's the kind of investment one can take home and not feel sorry later about buying, as Klipsch is all about high quality. In all honesty most home theater systems that are in the \$500 range don't sound this good, and are not made this well. The worse thing about this system is that it has made me seriously consider removal of my V2.400 system on my primary machine! That's how all encompassing this system really is.

Improving The View

Ok, so you may have the ultimate flight gear setup (stick, throttle and rudder pedals) and a cozy \$500 office chair, complete with leather armrests to boot! You think you have everything right? However, you're still viewing everything online, in the air and on every world that your PC allows you to enter via a 15-inch monitor or maybe a 17-inch monitor and (gasp) quite possibly a 14-inch monitor? Ouch!

Next to the PC mouse and keyboard, the monitor is usually the last piece of hardware to ever be upgraded until it dies or starts to mess up badly. Even then, some users still try to hold on to it. Most PCs today come with larger monitors, or the option to upgrade to one. However, the majority of PC users are still dealing with relatively small monitors compared to what is now available. Well, let me tell you people, there *is* a better life, one with much larger fonts, much more vibrant and colorful worlds to view, and much larger pictures to be seen. Yes my friend, a new monitor is the only way!

Some of the Latest PC Monitors

By Rod White

I've been using a 21-inch monitor for so long now that I just can't understand why anyone would, or could possibly deal with a 15-inch monitor or anything smaller. Even a 17-inch monitor looks small to me. But the good news is that monitors, like PC system memory, have come down a lot in price in recent years. In many cases, a new 19-inch monitor costs less than a new 3D-accelerator video card! Yes, they're actually that cheap now.

Here's an example. I have an awesome Viewsonic P810 21-inch monitor. I purchased it over three years ago now, for a whopping \$1350, and back then that was a good price! Earlier in the year, this very same monitor, which by the way in terms of specs is *STILL* an outstanding choice, could have been had for only \$750, brand new in the box! And that's because this model is so awesome that they kept selling them over the newer models even.

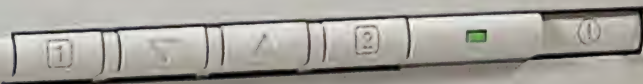
That's still a lot of cashola, but as you can see, look just how much of a decrease in price that is. Even today's current 21-inch models aren't much more than that, and in some cases some are even less! The predecessor of the P810 is the G810 from Viewsonic, and right now, you can pick one up for half of what I paid for mine. They run about \$629 now, with a full three-year warranty and even free shipping to some places.

Viewsonic's latest and greatest 21-inch model runs about \$894, and adds a lot of new features like the means to reach 1800x1440 resolution, but no one I know will need or use that capability. My point is that you don't need to purchase the very latest model to get a new monitor, most

Graphic Series
G810



ewSonic



of the monitors from last year, and even the year before will do just fine. So, you're not missing out by not getting today's hottest model.

Brand names

Choosing a good brand name is a wise thing. A prime example is a personal friend who picked up the cheapest monitor that a specific national retailer had to offer on sale. At the time it was a 19-inch monitor that cost only \$300, when all of the brand name monitors from the competition ran about \$400+ (this was about a year ago). Unfortunately, tech support was nearly nonexistent; the thing had such a field of distortion that TVs would freak out in the same room with it, and he was very afraid of radiation poisoning due to this field that it had put out. To make matters worse, the monitor lasted about a year until finally going to video heaven. So getting a brand you're familiar and comfortable with is a good thing, because you know what to expect from experience that way.

I recommend Viewsonic, Princeton, Optquest, Nokia, and Samsung. There are others who make good monitors, but I avoid mentioning Sony and NEC due to the fact that you really do pay A LOT more just for those name brands, when the competition offers the same capabilities and quality for less in most instances. (Find information on Viewsonic, Nokia and Optquest monitors on the Viewsonic Web site at www.viewsonic.com/.)

Specifications

Here's how I see it. Today if I had to do it all over again, I'd more than likely opt for a 19-inch monitor, because today it's the best value. Most good name brand 19-inch monitors run about \$350-\$400, some are even less. A prime example is the E790 from Viewsonic (shown above right), as it runs about \$350 and offers a .26mm dot pitch, and a maximum 1600x1200 resolution. These are the two

main specs to really worry about (next to the maximum viewable screen size, but more on that later).

The dot pitch is a measurement which essentially tells you how tightly knit the pixels that makes up the screen are placed next to each other. The lower the dot pitch, the sharper the picture will be. So always aim for the lowest dot pitch possible. If you

see a 19-inch monitor that's on sale for \$250 somewhere, but it has a .28 dot pitch, forget about it. This monitor will have a blockier picture than a 19-inch monitor with a .26, .25 or .24 dot pitch. It doesn't sound like a big difference, but keep in mind that on a monitor as big as 19-21-inches it's a lot more obvious due to the size of the screen that you're looking at.

The smallest monitor I would *ever* recommend is a 17-inch monitor. If you really can't afford

much more, it's still a good option over a 15-inch monitor. It may not sound like it's that much bigger, but believe me,

the first time I went from a 15-inch monitor to a 17-inch monitor years ago it was like entering a whole new world. Today most 17s run about \$160-\$225+ for a good one, meaning a .26 or lower dot pitch, with at least a 1280x1024 maximum resolution. Actually, today some 17s even offer a 1600x1200 maximum resolution, but you'll pay almost 19-

inch monitor price for one with that capability. Therefore, you're better off getting a 19-inch monitor before opting for a 17-inch monitor that's over the \$250 mark, if you absolutely must have the means to run 1600x1200.

A 21-inch monitor today isn't the largest monitor on the block any longer, as you can now find 22-inch monitors from Viewsonic in the \$850+ range. Anything bigger is more money than what it's worth, because most presentation monitors are very pricey, running in the \$2,000+ range, and offer less maximum resolution and far less image quality to boot. Think of anything bigger as a glorified TV with a means to display what your PC does. In some cases you would be better off using the TV out on most video cards and



purchasing a solid Sony 32-inch TV if you're looking for that big of a

PC monitor, because the quality would be about the same, and it would cost a great deal less.

A few other things to consider are flat tube or curved. Flat screens are always better, and curved are much cheaper. Also check the warranty, as three years is common, and you should accept no less. This is another reason why you want to avoid some of the off brands with just one-year warranties.

Read the fine print

A relative had a unique experience with MAG brand monitor. The warranty said that they could replace the monitor with what they consider a suitable replacement, even a refurbished monitor. Well the said victim had a 15-inch monitor with the means to reach 1024x768 maximum, and he purchased it brand new in 1999. It turns out that the monitor needed to be replaced completely, just six months after purchasing it at Wal-Mart.

The monitor was sent back to MAG. They sent back a refurbished monitor from 1997, with a maximum resolution of no higher than 800x600! They can get away with this because of the warranty policy; but the point is that reading the monitor warranty before purchase is always wise. So the lesson learned here is not to buy a MAG from Wal-Mart. Actually, they used to make some fantastic monitors in the mid-90s (and I used them for years). However, today it appears that they cater to the low-end market, and aren't as innovative or as high-end as they used to be.

Other factors

Also, many will argue that there are other important factors to go by, like refresh rate, short neck and size. But I've always purchased my monitors by getting the lowest dot pitch possible, the highest maximum resolution and the most viewable screen size. Keep in mind that some monitors may say that they are 19-inch monitors, but they may actually offer less than 18-inches of viewable screen. The rule of thumb is that one-inch less than the size advertised as it acceptable. For example, a 17-inch monitor with a 16-inch or better viewable screen size is acceptable, or a 19-inch monitor with 18-inches of viewable screen is also what you're looking for. Anything less isn't worth buying, because

if they try to cut corners there, chances are they're doing it on other features too.

I

also didn't bother mentioning flat-panel LCD monitors, because honestly, they're just not an option worth considering unless you have A LOT of money to burn. They are still about \$1,000 more than an average 17-inch monitor. Sure they do have an image quality that's outrageously nice, and they take up a lot less space, but it's just not a viable option for most gaming and flight simulation enthusiasts.

Some monitors also come with built in speakers, or a USB hub, but do keep in mind that 9 times out of 10 you're paying for them, or loosing other features or functionality to have them. So I feel that it's not worth opting for a monitor with speakers, unless it's a monitor for your Granny. The quality of built-in speakers is no where near being able to compete with most good standalone systems in terms of sound quality.



Conclusion

So to recap, when looking for a monitor you want to buy a name brand that you trust, or know for a fact through personal experience, or via recommendation from someone you trust is worth buying. Get the lowest dot pitch possible, for a 19-21-inch monitor .25 or lower is the best bet, and for 17s you can get by with .26 or smaller. Aim for the highest possible maximum resolution supported too. For 19-21s accept no less than 1600x1200 or higher. For a 17-inch monitor aim for at least a 1280x1024 maximum resolution, a monitor offering anything less isn't worth buying.

Believe me when I tell you that if you upgrade your monitor, it's almost like getting a whole new PC. Aside from a new PC, getting a new larger monitor will not only make things look that much bigger, but it may also give you the means to reach higher resolutions, enhance your web browsing experience, and countless other advantages are bound with a new, larger monitor.

That about covers it. Trust me, other than a monitor, there's little else you can upgrade that will affect how you look at your PC. Also, don't be afraid to go online shopping for one. I bought most of my monitors online since the mid-90s from online retailers like Necxdirect.com, and they even offer free shipping on items over \$300 these days, which would have been nice back when I ordered my 21-inch behemoth monitor!

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3-D Accelerator Roundup

The Latest Technology in 3D Video Cards

As always, technology moves forward with new and more promising products. The technology within the video card market moves at breakneck speeds. Something new appears almost every three to five months and it moves by great leaps and bounds every six to twelve months.

Almost everything we featured in our February/March issue it is now bested by either price or performance gains offered by the

newest technology driven products. A prime example of this, with respect to price, is Nvidia's new GeForce 2 MX 400 and MX 200 GPUs (Graphics Processing Units). As far as performance goes, the GeForce 3 is Nvidia's new offering.

The new GeForce 3 MX 200 and MX 400-based products are scheduled for release at press time. These represent a completely new GPU compared to the GeForce 2 MX-driven products of just a few months ago.

The GeForce MX 200 and MX 400 Technology

The MX 200 runs at the same 175 MHz core and 166 MHz memory clock speeds as the original GeForce 2 MX. They did change the memory interface, as the MX 200 is only capable of utilizing SDR (Single Data Rate) memory at 64-bit, and therefore, you will only see MX 200 boards in 32MB on-board configurations, without the benefit of the larger memory bandwidth of the original MX cards. Based on this, it may end up being a little slower than original MX-based solutions. Also, keep in mind that some MX-200 boards may come equipped with DDR (Double Data Rate) memory, but they won't utilize

it to its fullest potential due to the memory bandwidth constraint.

The MX 400 is a little different. While it too is essentially a GeForce 2 MX GPU, it's clocked higher at a core speed of 200MHz. Therefore, it's a little speedier than the original GeForce 2 MX and MX 200, and it can be outfitted with either SDR or DDR memory.

However, the MX 400-memory bandwidth is limited to 128-bit SDR and just 64-bit DDR, where as the original MX could handle 128-bit SDR, 64-bit DDR and 64-bit SDR. So the MX 400, like the original MX before it, is also missing being able to handle 128-bit DDR. Aside from cutting the pipeline down from the GTS, this is the only major feature that keeps these MX

chips from being as fast as earlier GeForce 2 GTS-based cards.

Now the MX-400 core clock speed has been boosted to 200MHz, with an extra 32MB of DDR SDRAM. What all of that "tech talk" means is that it's a little faster than an original MX in some ways, but it is still no match for a GeForce 2 GTS-based solution. The faster the memory is, and the larger the memory bandwidth is, the better the overall performance of the card will be.

The New GeForce 3

In addition to the MX-200 and MX-400, Nvidia is introducing the GeForce 3, which at press time is just hitting the

By Rod White



(Top) Combat Flight Simulator 2 rendered with The MS Starforce 826 MX-200 32MB Card (Above) Comanche Vs. Hokum using the MS Starforce 826 MX-200 32MB Card (Below) Transformation and Lighting (T&L) effects using the MS Starforce 826 MX-200 32MB Card with Combat Flight Simulator 2



retail shelves. The GeForce 3 is a technological leap ahead of the GeForce 2 Ultra, but at the cost of about \$399. This is cheaper than the \$450-\$500 price tag of the Ultra earlier in the year. However, the Ultra cards are down to the \$250-\$275 price range now.

While you can definitely make use of the performance and technological gains of the GeForce 3, the performance gains over a GeForce 2 Ultra doesn't make it a viable solution just yet for a gaming and flight simulation enthusiast, unless you have the money to burn. Sure it's fast and the biggest and best new piece of technology on the block. But quite honestly, all of the bells and whistles that the GeForce 3 has to offer won't really be taken advantage of until more DirectX 8.0 titles start to surface. Nevertheless, it's definitely the wave of the future, and we will be taking an in-depth look at the GeForce 3 in our next issue.

So for now, we will focus our attention on the new MX-200 and MX-400 based solutions.

The MS Starforce 826 MX-200 32MB Card

On the budget-end of things MSI offers a new solution that's well worth the price of admission. The MS-8826 is their 32MB equipped MX-200-based 3D card. At a street price of about \$70 it's definitely an appealing choice for simulation enthusiasts who are on a very tight budget and are tired of running an outdated 3D-accelerator. Since it's based on the MX core, the card offers Nvidia's 2nd generation T&L (Transformation and Lighting) engines, and all of the other fancy bells and whistles of an original GeForce 2 MX-driven system.

It features a 350 MHz RAMDAC and supports a maximum 2D/3D resolution of 2048 x 1536 at 75 Hz refresh rate. It also features AGP 2X/4X compliance (AGP Texturing/Fast Writes Support), and driver support for Windows 9x, 2000, ME, NT, or Linux. So it's a speedy little option for desktop tasks as well. Quite honestly, this low cost alternative is ideal for the work environment too due to its extremely inexpensive price tag, and is well suited for play just the same since it offers so many outstanding 3D capabilities.

Installation is very straightforward. Once installed and ready to go, you will find MSI is also considerate enough to include a copy of their DVD player software. This is motivation to get a DVD-ROM drive if you don't already have one because these days hardware DVD-decoders are pretty much a thing of the past. MSI Turbo 2000 is another added feature, which is essentially part of the video card driver package. Use it to tweak the settings a little to squeeze a little more performance out of the card.

Like previous MX-driven cards we've tested, the image quality and performance offered by this card is sufficient. Particularly when considering purchase price when compared to what a regular MX went for just a few months ago. In some instances, it may be slower than an original MX, but that's usually in a situation where you're running at very high resolutions.

This is the perfect transitional video card, ideal for those who'd rather wait until the GeForce 3 comes down in price. At a street price of \$60-\$70 this is a card well worth considering if you are looking for great, but not outstanding performance.

In titles like Comanche vs. Hokum, Combat Flight Simulator 2, Mechwarrior IV and various other titles, the card offered great performance and superb imagery. On a Duron 850 MHz machine with 128MB of memory the performance was great at resolutions well beyond 1024 x 768 in many of the titles we threw at it, and in 32-bit color no less!

There is no way you'll squeeze the performance of a GeForce 2 GTS out of this card, even when trying to overclock it. This is because of the memory bandwidth limitation. The fact that it's based on the original GeForce 2 MX technology limits its performance, making it more of a mainstream solution. This is just how MSI and Nvidia want to position this product. It's not the hardcore gaming enthusiast's first choice, but for the price, it shouldn't be overlooked.

Considering the level of performance that it offers, for about half the cost of a MX-based card of just a few months ago, there is really nothing at all to complain about with the Starforce 826 MX-200. What's more this is the perfect transitional video card, ideal for those who'd rather wait until the GeForce 3 comes down in price. At a street price of \$60-\$70 this is a card well worth considering if you are looking for great, but not outstanding performance, without having to rob Peter to pay Paul.

The MS Starforce 826 MX-400 64MB DDR Video Card

Although there are many different flavors of the GeForce 2 to choose from today, I would say that this offering from MSI fills in the gap from low-end to the mid-range end of the spectrum. It's hard to call it low-end due to the fact that it sports 64MB of DDR memory, with performance a little better than past MX models.

But at the same time it has limitations that keep it from completely matching the GTS due to its MX-based core design. So it's hard to call it low-end, and tough to call it a mid-range performer that's in the same league as a GTS, because it's not. It represents a card that is affordable enough to put the awesome GeForce 2 MX capabilities into the mainstream market. It is also a far better gaming solution than the previous GeForce 2 MX-based solutions of just a few months ago.

This MX-400-based card features a 350 MHz RAMDAC, with maximum 2D/3D resolution of 2048 x 1536 at a 75 Hz



(Both images above) Combat Flight Simulator 2 rendered with The MS Starforce 826 MX-400 64MB Card. (Below) Transformation and Lighting (T&L) effects using the MS Starforce 826 MX-400 64MB Card with Combat Flight Simulator 2





Comanche Vs. Hokum using the MS Starforce 826 MX-200 32MB Card

refresh rate. It has AGP 2X/4X compliance (AGP Texturing/Fast Writes Support), and driver support for Windows 9x, 2000, ME, NT, and Linux as well. It features all of the capabilities of the GeForce 2 MX, which includes the second generation T&L engines, Nvidia's Shading Rasterizer, and all of the other GeForce 2 MX design specs. Like the MX-200 based card we just looked at installation was a breeze.

As a performer, it does very well for a street price of \$129. This video card also just so happens to have 64MB of DDR SDRAM onboard. Almost everything we threw at it ran nicely with screen resolutions as high as 1600 x 1200, with awesome performance in some titles.

Although this is not a high-end video card, it has many of the features and capabilities of one.

As far as I'm concerned this is unquestionably one of the best bargain priced video cards on the market today, that gives you a lot more than the average bargain priced performance.

Again it's no GeForce 2 GTS, but it's as close as you're going to get for under \$130. Actually, we've seen this card selling for as low as \$90 + shipping online if you shop around, so don't let that street price steer you clear from it. Like most MSI video cards this one also comes with a copy of their DVD player software, and MSI's Turbo 2000 overclocking utility. So you might be able to squeeze a few more frames per second out of it by tweaking too.

Although this is not a high-end video card, it has many of the features and capabilities of one. Plus it's a lot cheaper than what a regular MX would have cost you earlier in the year, with a faster core clock speed and more memory on board to boot. Now you could have easily overclocked an original MX and got pretty much the same results as this card, but this way it's stock and guaranteed stable. As far as I'm concerned this is unquestionably one of the best bargain priced video cards on the market today, that gives you a lot more than the average bargain priced performance. While it's not a top of the line performer when put next to a 64MB DDR equipped GeForce 2 GTS, it does carry a price tag far more appealing, and a level of performance that's equally as appealing.

Some Quotes From The Wright Brothers

Orville Wright, born in 1871 and his brother, Wilbur, born in 1867 were sons of a minister. They did not smoke or drink alcohol and neither married. They always wore conventional business suits—even when tinkering in a machine shop. Although they may have been blessed with mechanical abilities, perhaps they lacked a bit of foresight as you can see in the se quotes.

"It is a bare possibility that a one-man machine without a float and favored by a wind say of fifteen miles an hour might succeed in getting across the Atlantic. But such an attempt would be the height of folly. When one comes to increase the size of the craft, the possibility rapidly fades away. This is because of the difficulties of carrying sufficient fuel . . . it will readily be seen, therefore, why the Atlantic flight is out the question." *Orville Wright, circa 1908*

"No flying machine will ever fly from New York to Paris ... [because] no known motor can run at the requisite speed for four days without stopping." *Orville Wright, circa 1908*

"We soon saw that the helicopter had no future, and dropped it. The helicopter does with great labor only what the balloon does without labor, and is no more fitted than the balloon for rapid horizontal flight. If its engine stops, it must fall with deathly violence, for it can neither glide like the aeroplane, nor float like the balloon. The helicopter is much easier to design than the aeroplane, but is worthless when done..." *Wilbur Wright, 1909*

A Quick Look at Microsoft Train Simulator

Perhaps it's the train set you had growing up, the games you played counting the railroad cars, or the light blue pinstripe overalls and matching hat that were worn as a kid more often than the knees could be re-patched. You think you've outgrown the fascination until you're sitting at a rail crossing and catch yourself once again counting the cars as they rumble by. It's been a long time coming, but welcome to Microsoft Train Simulator.

As flight simulators are able to satisfy, or increase, our desire to fly, Train Simulator should do the same for many of us. Like situations or missions found in the Flight Simulator programs, Train Simulator comes with 6 incredibly detailed routes. You can haul freight through the Rocky Mountains, operate Amtrak's new high-speed rail service between Philadelphia and Washington DC, be conductor of the famous Orient-Express or Flying Scotsman. You can even operate a train on some of Japan's more popular rail routes, like Shinjuku to Hakone-Yumoto.

In addition to the 600 miles of negotiable track of the 6 main routes, there are additional rides to test your

By Paul Lee







skills as a conductor. For example, operating on a quake damaged track, or through the snow covered Alps or Rockies, or following a detectives instructions in the activity "Murder on the Orient-Express."

The eight trains in the program are highly detailed, and the documentation for each is equally so. There are three types of locomotives; steam, gas and electric. Each is well documented in the manual, to compliment the instructional tutorials on how to operate the different trains. You'll also find detailed information regarding track signals, signs, speed limits and basic terms.

To truly customize the program, you have the option to change your payload and/ or the starting and

stopping destinations, to make each trip as unique as the first. There are also tools that allow you to build your own trains and routes. Like Flight Simulator, the 3rd party aspect of Train Simulator should bring the program to an even higher level, and offer enthusiasts a reason to keep coming back for more.

Like the mission builder in CFS2, Train Simulator will allow you to further customize the program. With a little patience, and I stress patience, you can create or customize new or existing routes, import objects for scenery, and make your own custom activities.

Visually, Train Simulator has a similar set-up like you'd find in Flight Simulator. The user can look left and right to view the scenery as it's gliding by. Unique to Train Simulator is the vantage point of the passenger. You can actually be a passenger in a rail car and pan around the car, or look out the window. This truly blurs the line between real and simulated. Watching the scenery roll by the window and listening to the realistic click clack of the track in the passenger view, one finds it difficult not to daydream and feel completely relaxed. And isn't that what rail travel is supposed to be?

The sound effects for the Train Simulator are top-notch. If you've ever traveled by rail, the sound of the track or hum of the engines is sure to leave goose bumps on many users. Sound the horn as you approach vehicle crossings and don't be surprised if you, yourself, are looking over your shoulders to see which direction the train is coming from.

There is no question it will appeal to the train enthusiast. But will it appeal to the flight sim enthusiast? Absolutely. Let's face it, we're known to be an odd bunch at times, but we're enthusiast because we pay strict attention to detail, documentation and realism. Even double and triple-checking the detail, documentation and realism. The flight simulation community will accept this product with open crossing gates, and we will offer a more in-depth review of Train Simulator in our next issue.

Next Issue...

In the next issue of *Flight Simulator World*, we'll have a more in-depth look and review of Train Simulator.

There is no question it will appeal to the train enthusiast. But will it appeal to the flight sim enthusiast? Absolutely. Let's face it, we're known to be an odd bunch at times, but we're enthusiast because we pay strict attention to detail, documentation and realism.



Corporate Pilot puts you in the left-hand seat of the speediest, most luxurious and sexiest planes available. Your job is to fly the cream of the crop in this expensive fleet of personalized aircraft (including Beechcraft Starship Rockwell Twin Commander, Cessna Citation X, Dassault FalconJet 2000, Cessna 441 Conquest and BeechJet 400A).

We're known for the visual impact of our aircraft. You'll see the difference in the rounded parts, elegantly transparent glass and smooth, moving surfaces. Also, you won't be surprised that we've extended the fine detailing to the inside of the aircraft.

To add more realism, *Corporate Pilot* includes several Round Robins that simulate the hectic schedule of a corporate pilot. You'll fly the demanding routes that your CEO requires, complete with flight plans, charts and air traffic control accompaniment.

1-55755-435-8 \$39.95



As its name suggests, the *Tips & Tuning Guide* provides a road map for performing the tuning and customization of FS2000 for maximum realism, maximum performance or anywhere in between.

You'll learn about changing the sounds of the aircraft, customizing your instrument panel, adjusting the realism settings, using FS2000 weather, changing image quality, finding the FS2000 Easter eggs, customizing joysticks and controllers, changing aircraft flight dynamics and more.

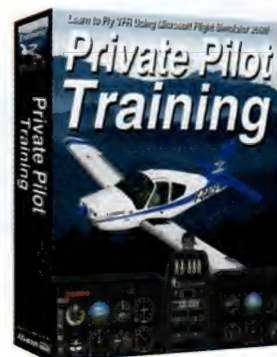
Also, if you can't wait it's also available for electronic delivery by download. The Electronic Edition contains the same information as the printed book but can be delivered to you rapidly- and you also save the shipping charges!

Check the Abacus website for more information.

1-55755-439-0 \$19.95

The *VFR Private Pilot Training* course is to be used specifically for flight training with Microsoft Flight Simulator 2000. By following the step-by-step approach, you'll learn VFR piloting based on five sound, practical lessons developed by aviation experts. The instructor talks you through each interactive, timed lesson. Your score depends on the quality of the maneuvers and your response to the instructor's requests. You'll train in Socata's new TB-10 Tobago Trinidad single complete with unique instrumentation. Each lesson has voice accompanied instruction making them completely interaction and easy to follow.

1-55755-436-6 \$39.95



This is the next generation design software for Flight Simulator 2000. *FS Design Studio* uses a Computer Aided Design (CAD) approach to designing real world models so you can visually and graphically interact with your design.

The *FS Design Studio Pro* package includes several tools, powerful features and time saving shortcuts for creating almost any kind of accurate, detailed 3-D textured object for the FS 2000 environment and is used by both novices and professionals.

Whether your goal is to drop a simple 3-D object into your local airport, add a more detailed stadium for your favorite team or undertake complex aircraft for your growing personal fleet, *FS Design Studio Pro* is the tool for all of these tasks.

1-55755-411-0 \$59.95



Private Pilot lets you fly the best of the light planes. You'll recognize most of the aircraft here since they're among the world's most popular models, as well as a few that many aviators can only dream about flying.

The attention to detail assures you that these lucky thirteen singles and twins look like the real thing.

When you step into a new plane, you should practice a few hours to become acquainted with its flying characteristics. We'll take you to Island Airpark located in Lake Michigan but not too far from Meigs Field. There you can practice your skills, whether it's a short field takeoff over 50 foot obstacles or a soft field landing, shooting the ILS in bad weather or holding over the NDB and other challenging maneuvers and approaches.

1-55755-410-3 \$39.95

In-depth reviews of the latest software, hardware, utilities, and more for FS 2000, Combat Flight Simulator and Combat Flight Simulator 2.

Reviewed this issue: **Flyscripts! and Cleared 4 Takeoff**
Fly! Airline Series 777-2001GW
Italy 2000
Air Power

Flyscripts! and Cleared 4 Takeoff

By Doug Horton

This is a story about two freeware developers and their two complementary programs for Terminal Reality's Fly! series. I started to write it as the usual review of the programs, but I was curious about the men (and woman) behind these programs, which are huge contributions to the enjoyment of flight simulation. With a few questions and answers from the authors, we can find out how these programs came to be.

They are *Flyscripts!* by Anthony Merton and *Cleared 4 Takeoff* by Marc Shrier. Incidentally, as is typical with our hobby, Anthony and Marc have never met in person, though their electronic collaboration has added significantly to the enjoyment and realism we "simmers" can experience with Terminal Reality's Fly! simulation series.

Flyscripts!

Flyscripts! is a new key to add-ons for Fly!. It is to Fly! what the Adventure Programming Language Compiler (APLC) is to the Microsoft Flight Simulator series, except that it doesn't actually compile; it runs user-written scripts directly. We can think of it as a bridge between a program or "script" (an adventure, for example) and the program under which it runs, such as Fly! in this case.

It's actually a bit more because it also utilizes the Fly! SDK to translate the program variables between the script and the Fly! program. Significantly, *Flyscripts!* can run multiple scripts

simultaneously, so in a familiar example, it can run an Air Traffic Control "adventure" and a Ground Proximity Warning System (GPWS) script at the same time. *Flyscripts!* is available for free downloading from many flight simulation web sites.

Anthony Merton is British, though he lives in Geneva, Switzerland. He's 40 years old, married, with three children. He has an Economics and Information Technology background and is an avid flight simulation fan. Surprisingly, he became a flightsim fan a few years ago when his wife saw Microsoft Flight Simulator on a store shelf and suggested he buy it for their new home computer. Two years ago, he got even more hooked on the hobby when his wife and sister offered him a Christmas gift that anyone else would envy: a "flight" in a Swissair full motion 747 simulator. Anthony says this was "awesome" and I'm certain it was.

This will sound a bit technical, but *Flyscripts!* began after Anthony talked to a customer who had a data migration problem. Anthony suggested that he solve the problem by using Lex and Yacc, which are lexical and syntactic analyzer tools that originate from Unix. Later, he figured out how the principles of these tools could be used to process user-written scripts,



(Above) *Cleared 4 Takeoff* Developer Marc Shrier and his sister Marylynn.

(Below) *Flyscripts!!* Developer Anthony Merton.



providing a "missing" functionality in *Fly!*. He wasn't thinking about an ATC program, as that seemed so ambitious. Rather, he hoped to support a simple GPWS script. With some later extensions to the language, the *Flyscripts!* concept became more powerful and enabled complex functionality such as that required for an ATC program.

Flyscripts! is written in the C++ programming language, and it's installed in its own folder within the *Fly!* root directory. At the time of this writing, version 1.21 was current and required for newer scripts such as *Cleared 4 Takeoff* v1.1 and perhaps for other scripts. Scripts are written with simple and familiar programming commands like IF, THEN, ELSE, ENDIF, WHILE, DO, ENDDO, GOSUB, PLAY, etc.

Anthony provides a very complete explanation in the instructional manual provided with the program. After *Fly!* is started, *Flyscripts!* is activated with a LEFT ALT F12 key press or terminated with an LEFT ALT F11 key press.

Upon activation, it processes all scripts residing in the *Flyscripts!* folder. Thus, a brief word of caution: scripts that are not to be run should be temporarily removed from the *Flyscripts!* folder, or renamed to change the filename extension.

Cleared 4 Takeoff

After Anthony "went public" with early versions of *Flyscripts!*, Marc Schrier expressed interest in writing an ATC program and a transcontinental collaboration was formed. Anthony then extended the *Flyscripts!* language to support Marc's efforts to write the ATC script that has become *Cleared 4 Takeoff*.

Marc lives in Montgomery, Alabama. He's 33 and single, though he says he's "married to the computer." He graduated from Auburn University with a degree in Aviation Management. He's an FAA Air Traffic Control Specialist, and he's a real pilot. In my view, it's this combination of experiences that is the key to the realism and success of *Cleared 4 Takeoff*. Marc says he's been "addicted to

Marc and Anthony have never met in person, though their electronic collaboration has added significantly to the enjoyment and realism we "simmers" can experience with Terminal Reality's Fly! simulation series.

simming" since his college roommate introduced him to Flight Simulator running on a 286 PC with an amber monochrome monitor. We also need to recognize Marc's sister Marylynn, as she's the voice of the pilot in the original set of audio files recorded for the program.

Marc says that for the past year, he's been extraordinarily impressed with the realism of the *FLY!* flight simulation program - "especially when using third-party add-ons such as *Sky!*, *Terrascene*, and Rob Young's fantastic flight models!" However, as a professional air traffic controller, he was not satisfied with the default ATC operation in *Fly!*.

After he teamed with Anthony, he says, "through the magic of *Flyscripts!*, I have been able to take steps to correct this." *Cleared 4 Takeoff* is his initial (and he says "probably over-ambitious") attempt to generate a realistic ATC environment while flying on an IFR flight plan within *FLY!*. Users will soon understand that his attempt is very successful! And believe or not, Marc says this was his first programming effort since taking some BASIC and FORTRAN courses in college.

Version 1.0 of *Cleared for Takeoff* includes a variety of realistic ATC features, including:

- Implementation of Clearance Delivery, Ground, Tower, Departure, Center, and Approach Runway assignments based on wind direction
- Accurate ILS approach vectors
- Real-world ATC phraseology (per FAAH 7110.65)

- Automatic determination of correct altitude for direction of flight
- Missed approaches
- Speed restrictions
- Spoken wind and altimeter settings
- Lower and higher altitude requests
- Intelligent control instructions based on aircraft performance
- "Say again" routine with custom pilot read backs
- Altitude, speed, and heading deviation monitor
- Frequency changes based on the *FLY!* ATC database
- Uses the *FLY!* Flight Planner (no 3rd party planners required)
- Terrain monitoring (but "don't expect miracles," according to Marc) Can be used simultaneously with other scripts

Using the program is very simple. The script file is placed in the *Flyscripts!* folder, and as I mentioned above, users may wish to rename any or temporarily remove other scripts from this folder. After *Fly!* is started, you use its Flight Planner to make a flight plan that must have at least one intermediate waypoint. You then save this flight plan with the mandatory name *fp.rio*. Alternatively, you can use any other program that can export a flight plan in the *Fly!* format, such as Ernie Alston's new freeware *FSBuild* (you need to make sure it's placed in the *Flyscripts!* folder with the name *fp.rio*).

Alt	+	A	Auto-tune radio ("A"uto-tune)
Alt	+	C	Check-in with ATC ("C"heck-in)
Alt	+	R	"Roger" Control instructions ("R"oger)
Alt	+	S	Repeat Control instructions ("S"ay again)
Alt	+	N	Display enroute navigation information ("N"av info)
Alt	+	D	Request lower altitude ("D"own)
Alt	+	U	Request higher altitude ("U"p)
Alt	+	M	Declare Missed Approach ("M"issed)
Alt	+	E	Declare an Emergency ("E"mergency)
Alt	+	Q	Toggle traffic vectors On/Off ("Q"uit vectoring for traffic)
Alt	+	Spacebar	Toggle Visual Approach request On/Off
Alt	+	Home	Report field in sight ("Home" is in sight)
Alt	+	End	Cancel IFR ("End" ATC). There are additional keystrokes for landing VFR and calling pattern legs after using ALT+End.

Specifying weather is optional, and doing so will provide for realistic runway selection. After selecting an aircraft and starting *Fly!*, you press ALT LEFT F12 to start *Flyscripts!* processing of the script. The next step is to contact Clearance Delivery, and Marc has made the keystrokes quite intuitive and very easy to remember (see table on following page).

To contact Clearance Delivery, you press [Alt]+[A] to auto-tune, then [Alt]+[C] to check-in (or "C"ontact). After your IFR clearance is read, you press [Alt]+[R] to "roger" (or "R"eadback) the clearance. This is an important sequence to remember because it is used throughout the ATC "adventure."

You can tune radios manually using the frequencies available by clicking on the airport on the *Fly!* Vector Map, but Marc reports that there is a bug affecting COM1 in the Cessna, Malibu, and Navajo Bendix-King radios, so if you choose to manually tune, you should use COM2. This is important to know about, because when using the auto-tune feature for the three aircraft mentioned, the radio will be tuned correctly internally, but you won't see the digits change.

As you can see if you've tried to use *Fly!*'s built-in ATC function, the keystroke functions in *Cleared 4 Takeoff* are much simpler to use than the keystrokes in *Fly!*. At this writing, Marc has released version 1.1 of *Cleared 4 Takeoff* and he has added a few more features and associated voice files. For example, Departure Control checks for the correct transponder code, and there is an enhanced method of requesting a visual approach to landing while remaining IFR (with vectoring), or canceling IFR and flying visually to land without vectoring. Both of these options are completely "real world" and they add to the program's realism.

Marc indicates that he'll wait for any further revisions until *Fly! II* is released. Also, he's looking for volunteers to record more voices. I'll be using *Flyscripts!* and flying ATC with *Cleared 4 Takeoff*, and we simmers owe these gentlemen a big THANKS for their great work with these two programs.

For More Information

Flyscripts! And *Cleared 4 Takeoff* are freeware add-ons for the *Fly!* simulator. They're available in the file libraries of popular flight simulation Internet sites, including:

<http://www.avsim.com>

<http://www.flightsim.com>

Ernie Alston's new freeware program FSBuild available at <http://ourworld.compuserve.com/homepages/alstoer1/fsbuild.htm>

Some Quick Aviation Trivia

The SR-71 Blackbird spy plane was made primarily from titanium. Unfortunately, the US doesn't have any domestic supply of titanium, so the CIA set up a dummy corporation to buy titanium from the Soviet Union, the largest producer. So, in a sense, the Soviet Union helped the US spy on themselves.

Although its official designation is the Stratofortress, aircrews have called the B-52 "BUFF" for Big Ugly Fat Fella.

Boeing used the name Dash 80 for the 707 during development in order to disguise its non-propeller driven nature.

Only one Luftwaffe fighter was available to strafe the beaches of Normandy during the D-Day invasion.

Modern aircraft carriers can outrun WW2 PT boats.

Precision Manuals Development Group FLY! Airliner Series 777-200IGW

By Doug Horton

When I reviewed the PSS 777 for FS2000 in the December/January issue, I suggested that the aircraft, panel, and sound package were the most impressive third-party programming efforts to date. Now that I've seen the Precision Manuals Development Group 777-200IGW for Fly!, I suggest that PMDG's 777 easily matches the PSS product. In some respects, I feel that the PMDG work may be a greater achievement because there is so little known about how to construct aircraft and panels for Fly!. So, in their respective venues for FS2000 and Fly!, both the PSS and PMDG efforts to produce an accurate 777 top my list of remarkable flight simulator add-on developments. This review puts the spotlight on the PMDG's product and its international team of developers.

Features

Here are the advertised features of the PMDG 777 aircraft development:

- Working FMC
- Fully functioning 777 electronic flight instruments
- Completely defined electric, hydraulic, and pneumatic systems
- New autopilot with increased functionality
- Ground Proximity Warning System (GPWS)
- Traffic Collision Avoidance System (TCAS) with audio alerts, which works with *Squawkbox*
- Sounds recorded from 777 line operations
- Detailed 180+ page aircraft operating manual
- Highly accurate flight model
- Motion-animated landing gear and wheel trucks
- Animated flight controls, engine fans, and thrust reversers
- Most detailed external model used in Fly!

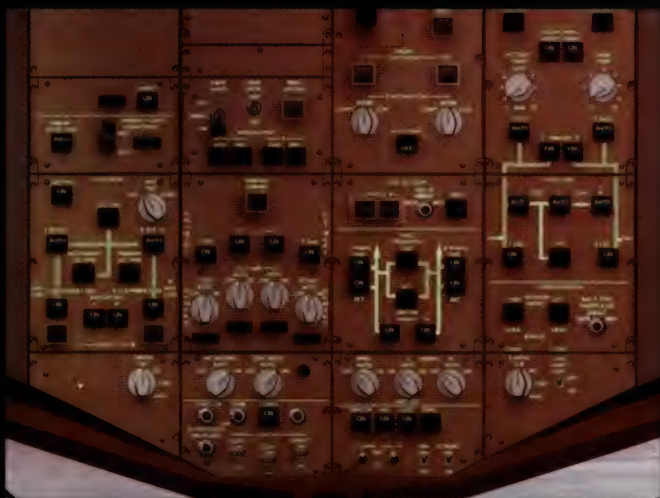


(Top) Center pedestal, with radio controls and a third FMC screen. (Above) Full flaps in air for "slow flight" maneuver. (Below) Portion of main panel with lights on, at dusk





(Top) Flaps extended and right engine thrust reversers open. (Above) Takeoff, with five degrees flaps and tilting gear. (Below) Overhead panel with lights on.



Documentation

PMDG's efforts began with publishing professional manuals for flight simulator aircraft, and to this end, they continue to occupy a unique role in the flight simulation community. Accordingly, I mention the manual first, because it is truly professional and totally authentic. This certainly adds to the realism, but in comparison to the PSS 777 manual, it will be more difficult for many users to learn how to operate the panel sections.

The manual provides 187 pages of text, graphs, and real checklists, but many readers will doubtless look at the manual and wonder what to do next. I was able to use the checklist to start the engines, but it took a while to find all the referenced switches, and even then I wasn't sure what each was for. Though very complete with detailed descriptions, the manual does not include the color graphics for gauges that are provided in the PSS 777 manual.

As with all manuals, there are tradeoffs. Consider that the PSS 777 manual is for flight simulator fans who need to start from scratch and learn about the instruments and panel, with less focus on performance data and ultimate realism. The PMDG 777 manual requires flight simulator users to cast themselves in the role of a real pilot who is upgrading to the 777, so it assumes a great deal of knowledge about airliner systems. In both cases, you can get to the objective, but I think the PMDG approach will be quite challenging for many simulator pilots. Of course, part of the fun is the challenge provided by learning about a new aircraft and its systems.

The Aircraft

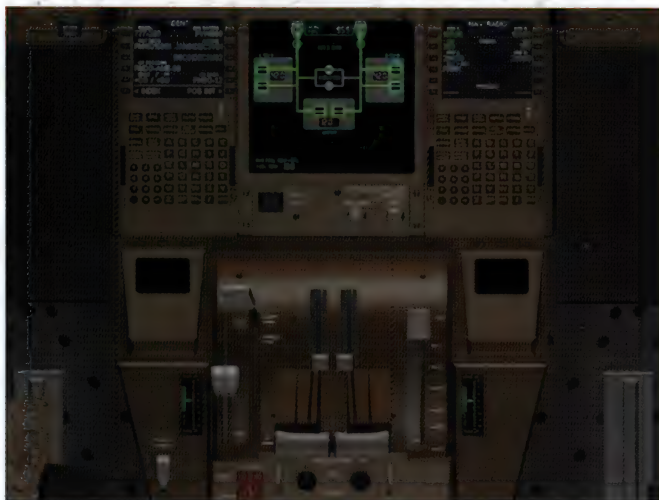
The exterior is modeled in extraordinary detail, with a variety of animated functions. In addition to the main control surfaces, animation includes thrust reversers, segmented flaps, slats, spoilers, flaperons, nose gear steering, and landing gear that hang after takeoff and reorient when retracted. Unfortunately, the 1024 x 768 rendering limitation of Fly! (as well as Fly!2k and Fly! II) limits the onscreen resolution to less than what the aircraft would look like in FS2000.

The PMDG aircraft is furnished with three default liveries:

- PMDG
- British Airways
- United Airlines

At this writing, three livery packs are available at additional cost:

- Cathay Pacific, China Southern, Japan Air Lines, and All Nippon Airways.
- Emirates, Korean Airlines, EgyptAir, and Thai International Airways.
- Continental Airlines, Singapore Airlines, Malaysian and Saudi Arabian.



Throttle console, with dual FMCs, and EICAS display with fuel system selected

Instrument Panel

You want ultimate realism? You get it! The four panel sections have more operational switches and buttons than any other panel for this or any flight simulation aircraft I know of. There are four panel sections: overhead, main, throttle console, and center pedestal. One more than what's provided with most flight simulator panels. And that adds to the challenge.

After reading pertinent sections of the manual, I still could get the EICAS visual system status display to work on the throttle console and had to ask for help. Hint: after turning on display switch, which I did, you need to select a system to display (engines, fuel, doors, gear, hydraulics, air, or electrical) with the buttons to the right of the autopilot controls on the main panel. I got spoiled with the associated touch-pad on the throttle console on the PSS 777, which isn't functional on the PMDG product.

The panel sections utilize all realism available with Fly! in terms of aircraft systems and panel functions. The FMC is particularly impressive, as it includes more functions than programmed in any other flight sim product. I'm still trying to learn everything there is to know about operating all panel functions. Another hint: the Nav radios are operated through the FMC.

Sounds

According to the developers, the real 777 sounds included with this package were recorded on the flight line. I find the sounds to be completely realistic, including relative volume levels. For example, the sounds of the APU startup and flaps operation are barely audible, as I'd expect them to be, as heard from the cockpit.

The Development Team

Precision Manuals Development Group was founded by Robert S. Randazzo in 1998. It was originally conceived as a small technical publishing company, and its first product, the *747-400PS1 User's Guide* was released in early 1998. This 300-page book was developed to provide users of the 747-400PS1 by Aerowinx, with a detailed educational guide for this complex simulator.

Looking toward the burgeoning add-on software market for Microsoft Flight Simulator, PMDG launched the *FS98 Series Aircraft Operating Manual* product line. Building on the same detailed, reality-driven style used in the *747-400PS1 User's Guide*, the FS98 series manuals added an improved flight model, with a replacement *.air file. The developers feel that the success of this product line was based largely on simulator enthusiasts' desires for greater fidelity and detail in PC flight simulation.

In 1999, PMDG became the first software developer to formally announce support for Fly!. While the Fly! development team succeeded with general aviation aircraft, initial unavailability of an SDK limited development efforts by others. PMDG filled this gap with their 757-200ER. Designed to provide a complete airliner

experience for Fly!, the product modeled approximately 90% of the systems, switches and functions in the cockpit of the Boeing 757-200, all in accurately modeled 3D rendering. With dozens of switches and complicated systems and procedures to learn, the product included a 160-page operating manual, written in PMDG's detailed style.

After producing the *FLY! Airliner Series 767-200/300*, PMDG expanded the development staff to include an additional complement of highly skilled developers whose sole responsibility would be to reproduce the cockpit computer systems used aboard the venerable Boeing 777. The *FLY! Airliner Series 777-200IGW* is the culmination of this effort.

PMDG's development team is impressive and truly international, reflecting the diversity of flight simulator users worldwide. The team includes:

Robert S. Randazzo
Founder and Senior Developer

Robert served twelve years in management for United Airlines and is currently flying as a Captain for United's Washington, DC-based United Express affiliate. Robert programs the aircraft systems and produces the aircraft models for PMDG products.

Marc Harrington
3D Cockpit Designer/Webmaster/
Assistant Marketing Manager

Marc lives near Frankfurt, Germany. He currently attends the Frankfurt International School and is working toward future employment as a pilot at Lufthansa. Marc is primarily responsible for the development of the cockpit 3D models and assists in the administrative functions of PMDG.

Lefteris Kalamaras
Lead Developer / Programmer (EFIS systems)

Lefteris lives in Athens, Greece. He worked in New York for 10 years as a software developer and now runs an Internet development business in Greece. Lefteris recently began pilot training, and manages the code/SDK development process at PMDG.

Anthony Merton

Programmer (FMC and AFDS systems)

Anthony lives in Geneva, Switzerland. He has BA in Economics and has worked as a development manager and consultant for financial IT systems for over 10 years. Anthony's most interesting flight experience is in the 747 simulator at Swissair. Anthony is primarily responsible for the FMC, AFDS, and FD interfaces in PMDG products.

Vangelis M. Vaos, Ph.D.

Flight and Engine Model Developer

Evangelos (Vangelis) was born in 1967 in Athens-Greece. He graduated as a Mechanical Engineer from NTU-Athen and received his M.Sc. and Ph.D. degrees in Computational Fluid Dynamics at the Imperial College London-UK. He has co-authored and presented several papers in scientific journals and international colloquia.

He currently works as a freelance research consultant-engineer for major aero-propulsion, power generation and defense industries, as well as state sponsored institutions.

Matt Naragon

Model Artwork Developer

Matt lives just outside of South Bend, Indiana. He is planning to attend college this fall as a graphic arts major. Matthew produces liveries for PMDG models.

Dave Cochran

*Technical Writer/Product Development/
Staff Anchorman*

Dave lives in Central Virginia where he is recognized for his role as a news and weather anchor on a popular morning news program. Dave flies a small plane on occasion although his golf game is rumored to be better than his landings. Dave handles some

aspects of the technical writing at PMDG and flies frequently to visit his fiancée Cindi.

Summary

The PMDG 777 is a remarkable achievement, and I offer my personal Bravo Zulu to Robert Randazzo and his team. PMDG has announced that free patches will be available to ensure compatibility with Fly! II, and they have announced that they are considering expanding into designing aircraft for Microsoft Flight Simulator 2002. I hope they do!

For More Information

Precision Manuals Development
Group

www.precisionmanuals.com

SRP: \$34.95

Extra livery packages: \$10.00, with
combination pricing offered

Italy 2000 from Lago

By Phil Paschutine

Italy 2000 is Lago's latest and last software release. After some 16 years, Lago is definitely closing its doors and this will affect the flight sim community in many ways. Over the last 6 years, Lago had constantly improved the quality of its products and I found very little to gripe about when reviewing their add-ons. I must say that Ugo Grandolini CEO of Lago (and his team) has always taken the time to provide lightning fast answers or others to my -many- inquiries. I wish him the very best of luck in the future.

Installation and Documentation

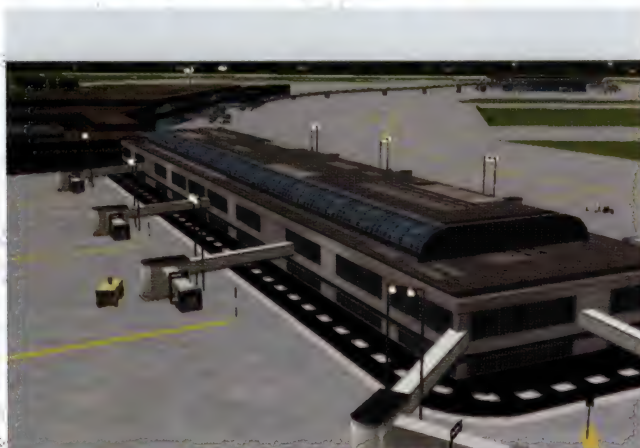
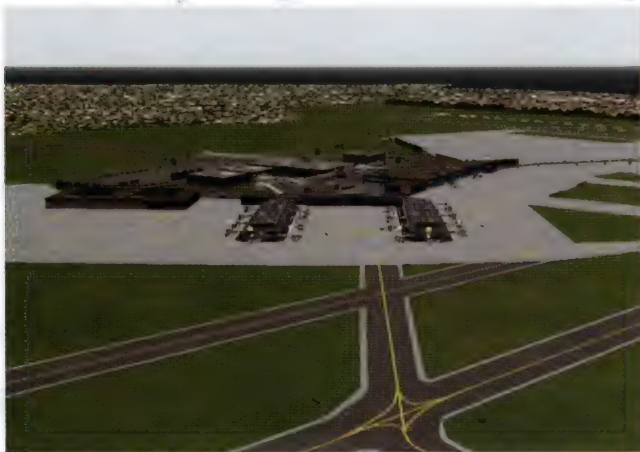
Installation is automated and you need a code for setup to begin. Setup will ask you if you want the radio messages to be in English, German or Italian. You will need about 55 MB of free disk space for installation of the scenery. The CD-ROM includes Adobe Acrobat Reader and the latest FS updates (foreign and US versions). You will also find references to the FSTraffic and Lago web sites. The English, Italian and German manual includes 10 pages for installation and FAQ's, 45 navigation charts, and a listing of the 107 airports with data. An Enroute chart is also supplied



(Top) A typical airport layout in Italy 2000



(Above) Lago's Active traffic module (Below and bottom) Roma Fiumicino, featuring some very nicely detailed custom 3D objects



The Scenery

This is *not* a modified version of Italy for FS98, but a complete rewrite. Italy 2000 has airports made from scratch, built around the FS2000 default runways. I noticed that a few airfields were missing. The design technique is far from being innovative, but it is not something Flight simmers will care about as long as they can fly to and from an enhanced airport.

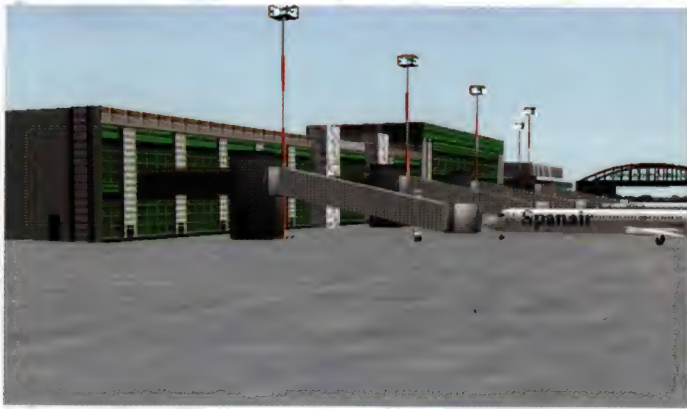
You can use the World/Go To airport menu item or load any of the 100+ situations. Airports have custom designed buildings and many generic hangars. Since this is not a hyper-detailed-airports-type-of-add-on, the repetition of some 3D objects is not an issue. Slew mode addicts will find nice additions like hot air balloons at Levaldigi, moving truck at Vicenza, outdoor furniture at various locations, and road signs. As you can see, there is nothing complicated, but it does the trick and the airports are nice to look at. The following screenshots give you a general idea of what to expect.

Italy 2000 has Active Scenery, meaning you decide if you want any active traffic and the number of static aircraft that you want to be displayed at any time. Make sure you do not "up and go" right after loading an airport because if you do you will not see any traffic. Take your time and read a few checklists and by the time you're done, traffic will be active. When aircraft follow one another, they are smart enough not to ram each other. When one is lined up, the next one is at the holding point awaiting his turn. Even with details and traffic to at maximum levels, frame rates were not an issue on my system.

Oddities and Complaints

I noticed there were huge runway/taxiway signs at the major airports, but since there are flight simmers who do fly in cockpit view rather than spot view, they will find the oversized signs a big help when taxiing. Just do not ram your engine pod into them.

Some fences overlap on roads, there are small textures gaps and oversized items (huge lady at Campo Di marina). Use of the old "crux" tree macros. I am sorry to say that although the white and yellow taxiway lines are easy to follow, they are far too wide. The reason for the large width is that they are easy to join, but they look very out of place. Lines are much more realistic with smaller width, even though they are a huge pain in the neck for the scenery designer to join. A clean joint that does not overlap can take as long as thirty minutes to do, moving the line a pixel at a time. So far, I have not seen any clean joints in any of the scenery I have reviewed, and Italy 2000 is no exception.



The terminals at Linate

Conclusion

Italy 2000 was not advertised as a "hyper-detailed airports" package, and considering it covers the whole of Italy, you are getting more than your money's worth. If you loved Italy 98, buy Italy 2000. It does improve the FS2000 default scenery.

For More Information

Lago Snc

SRP: \$26 or 29.99 Euro

www.lagoononline.com/

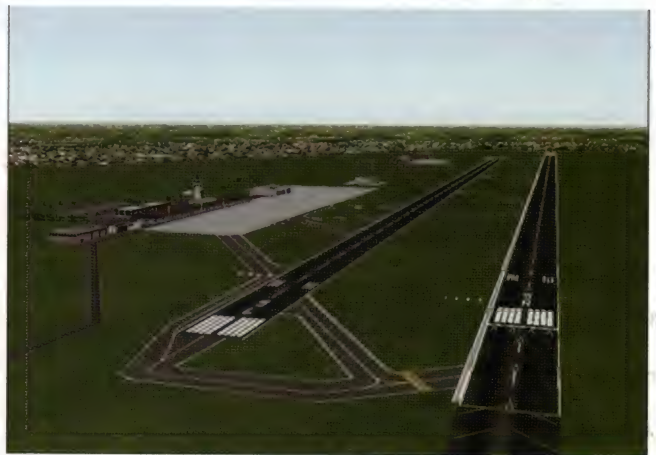
Visit the Lago web site on a regularly for a link to the company that will be taking over Lago product sales. Non Internet users will find the new company address in the next issue of *Flight Simulator World*.

Publisher's minimum recommended setup

- 450 MHz CPU
- 64Mb RAM
- 60 Mb free hard disk space
- Microsoft Flight Simulator 2000
- Win95, 98 or win Me
- 3D accelerator video card

Mesh Scenery

Add-on Mesh scenery will (in most cases) not be quite fully compatible with commercial scenery because the altitude of the mesh scenery at the airport location does not absolutely correspond to the altitude of the scenery.



(Top) The control tower at St Angelo Ct; (Above) The airport layout at Tesserà; (Below) Some very convincing night lighting effects are employed in Italy 2000



Air Power From Just Flight

By Phil Paschutine

After *Attack Squadron*, *Luftwaffe Collection*, *Pacific Combat Pilot*, *Royal Air Force 2000*, Just Flight's latest offering, *Air Power* offers 29 fighter aircraft of the NATO and Warsaw Pact Air Forces during the Cold War era between 1947 and 1970.

Air Power can be installed for Microsoft Flight Simulator 98, 2000 and Combat Flight Simulator. I installed it on FS 2000 and CFS 1, and tested 11 of the 29 aircraft. The 57-page manual has an alphabetical description of each aircraft with specifications, model and panel features along with an outside view and a cockpit view with legend.

Aircraft Spanning Four Decades

Air Power is a "fly and shoot" add-on, meaning that only the primary instruments and guns are working. Of course, the weapons are only active in *Combat Flight Simulator*. The 29 aircraft are of the same quality as the ones in *Pacific Combat Pilot*. A trademark of the Just Flight aircraft add-ons is the cartoonish textures. As always, some will complain and some will love them. Looking at the aircraft in spot view I felt I was Buck Danny.

All aircraft have moving flaps, gear and speed brakes. Unfortunately, the visual modeling is lagging far behind what you will see in many add-ons available today. Many of the cockpits are graphically appealing, but do not expect any moving levers and switches, as the only one I found was the gear lever, but not in all aircraft. If you use the aircraft in FS 2000, gauges are night-lighted, as expected. I do hope that in the future, Just Flight will treat us to military cockpits with all working levers and switches.

Ground maneuverability is good in both CFS and FS 2000. Aircraft are equipped with speed brakes that can be operated with the "/" key. The Mirage IV has a chute that opens with the speed brakes. As always, the aircraft are highly maneuverable in the air. For example, the MIG-15 can do a 360° turn in less than 3 seconds. Of course, you need a good joystick and mounting configuration system to make the most out of these fast birds.

When used in CFS, the aircraft have guns, cannons, rockets and bombs. Guns can be located fore and aft. Curiously, the Dassault Mirage IVA carries Bombs only. Be aware that some weapons are active but



Exterior (left) and cockpit views (below) of themikoyan Gurevich MiG-15bis



Exterior (above) and cockpit views (left) of the Gloster Meteor FMk.8





McDonnell F-101A Voodoo

show zero in the ammo field. This is due to the aircraft not having that type of weapon, or because you need to define how much ammo you need.

Of the 29 aircraft, only 8 have their own sound files. Purists may be frustrated when hearing the English Electric Canberra B2 sounds when flying the Ilyushin IL-28 Beagle, or the Mirage and Tupolev Tu-16 Badger sounds in the NA B-45C Tornado.

Missions and Scenery for Combat Flight Simulator

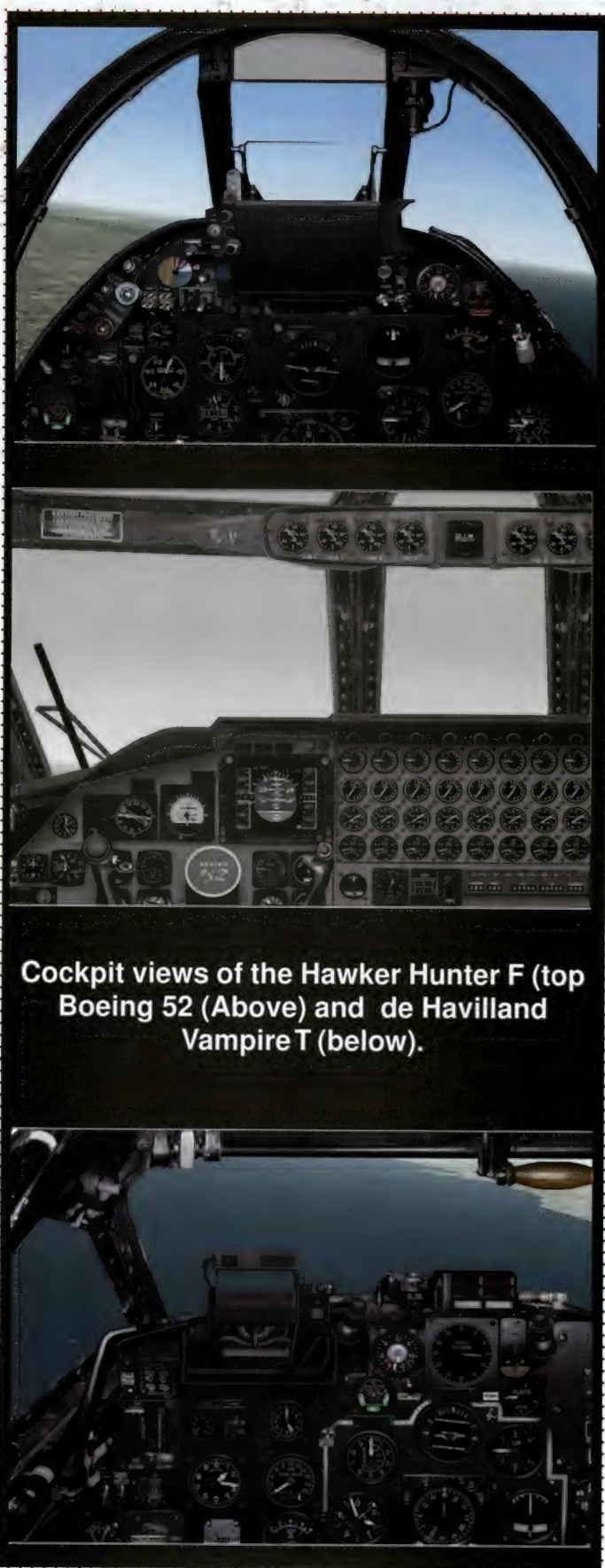
There are 20 missions included with the package. Four of them involve the USAAF, seven for the RAF, and nine for the Russians. You will experience ground defense to sub attacks in full Campaign or quick Combat mode. The two airfields, Schmoldow in Germany and Woodbridge in the UK are basic only and included to provide a home base.

Conclusion

Although the overall quality of the aircraft and panels can, at best, be viewed as average. But considering the sheer number of aircraft, Air Power can be a nice addition to your CFS and/or FS 2000 aircraft library. The missions for CFS are engaging, and the aircraft do feature moving exterior parts and fairly good flight characteristics. But the more discriminating enthusiast, who has come to expect things like functional cockpits, realistic sounds, and top-quality aircraft visual modeling, will be disappointed.

For More Information

Publisher: Just Flight Ltd.
Email: orders@justflight.com
www.justflight.com/
SRP: £9.99



Cockpit views of the Hawker Hunter F (top)
Boeing 52 (Above) and de Havilland
Vampire T (below).

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Talk The Talk

Aviation uses so many specialized terms that it's easy for nonpilots to get lost in the lingo. Here is a list of the most common aviation acronyms you may see in Flight Simulator World and other aviation related materials.

ADF

Acronym for Automatic Direction Finder. A radio compass which gives a relative bearing to a non-directional radio beacon

AGL

Acronym for Above Ground Level, as opposed to MSL (Above Sea Level).

ARTCC

Acronym for Air Route Traffic Control Center.

ATC

Acronym for Air Traffic Control

ATIS

Acronym for Automatic Terminal Information service. A continuous recorded broadcast of routine non-control airport information, usually at large airports.

AWOS

Acronym for Automated Weather Observing System

CDI

Acronym for Course Deviation Indicator. The vertical needle of a VOR indicator which shows the aircraft's position relative to the selected VOR radial.

CFI

Acronym for Certified Flying Instructor

Class D Airspace

Generally that airspace from the surface to 2,500 feet above the airport elevation. Class D airspace only surrounds airports that have an operational control tower. Pilots are required to establish

and maintain two-way radio communications with the ATC facility providing air traffic control services prior to entering the airspace.

Clean Stall

Minimum speed at which the airframe produces lift, with flaps extended

DH

Acronym for Decision Height-altitude above ground, below which you *must* land

DME

Acronym for Distance Measuring Equipment. The onboard equipment in the aircraft reads a continuous gradient range distance-from-station readout by measuring time-lapse of a signal transmitted by the aircraft

EFIS

Acronym for Electronic Flight Instrument System. A function CRT displays replace traditional instruments for providing flight navigation and aircraft systems information.

FAA

Acronym for Federal Aviation Administration

FAF

Acronym for Final Approach Fix

FAR

Acronym for Federal Aviation Regulations.

FBO

Acronym for Fixed Base Operator. Commercial operator supplying fuel, maintenance, aircraft sales, rental, flight training, and other General Aviation services at an airport.

FIR

Acronym for Flight Information Region.

FL 220

Flight Level 220 = 22,000 feet above sea level.

FMC

Acronym for Flight Management Computer

Glideslope

The vertical guidance part of an instrument landing system which establishes a safe glidepath to a runway.

GPS

Acronym for Global Positioning System

HSI

Acronym for Horizontal Situation Indicator

IAF

Acronym for Initial Approach Fix

IAP

Acronym for Instrument Approach Plate

IAS

Acronym for Indicated Air Speed

ICAO

Acronym for International Civil Aviation Organization.

IFR

Acronym for Instrument Flight Rules. Generally when visibility is less than three miles, and when flying at altitudes above 18,000 feet. Pilots without instrument rating (certification) and the proper onboard equipment are restricted from operating the aircraft under these conditions.

ILS

Acronym for Instrument Landing System A navigation aid that uses radio beacons for vertical and horizontal guidance during approach. The localizer provides lateral guidance, while the glide-slope defines the correct descent.

IMC

Acronym for Instrument Meteorological Conditions. Weather below VMC conditions (see VMC below)

Inner Marker (IM)

A waypoint situated directly in front of the runway intersection defined by intersecting radials from either navigational beacons or established airways.

Intersection

Point where two published airways meet.

June and July In Aviation History

June 4, 1784**First balloon flight by a woman**

Mme. Thible, a French opera singer, took the first balloon flight by a woman.

July 2, 1900**First zeppelin**

Count Ferdinand von Zeppelin of Germany flew the first of his rigid-frame airships. His zeppelin achieved a speed of 18 mph and flew a little over three miles before suffering problems with its steering gear.

July 25, 1909**First flight cross English Channel**

Starting near Calais, France, Louis Blériot flew in a 25-hp Blériot VI monoplane to near Dover Castle, England, in a 37 minute, 26.61 mile flight across the English Channel.

June 15-16, 1919**First nonstop transatlantic flight**

British flyers Capt. John Alcock and Lt. Arthur Whitten Brown made the 1,900 mile trip from St. John's, Newfoundland, to Clifden, Ireland, in slightly over 16 hours in a Vickers-Vimy bomber with two 350-hp Rolls-Royce engines.

July 13, 1919**First lighter-than-air transatlantic flight**

On July 2, Major George H. Scott, commanding the British dirigible R-34, left Firth of Forth, Scotland and touched down at Mineola, Long Island, 108 hours later. The eastbound trip, completed on July 13, took only 75 hours.

July 21, 1921**First naval vessel sunk by aircraft**

Brig. Gen. William S. Mitchell successfully sunk two battleships that were destined for the scrapyard in a demonstration show.

June 4-5 1927**First transatlantic passenger**

The first transatlantic passenger was Charles A. Levine. He accompanied pilot Clarence D. Chamberlin from Roosevelt Field, N.Y., to Eisleben, Germany, in a Wright-powered Bellanca.

LOC

Acronym for Localizer, which is the azimuth guidance portion of an ILS (Instrument Landing System).

LOM

Acronym for Location of Outer Marker (marker beacons).

LSO

Acronym for Landing Signal Officer, who guides an aircraft in on an aircraft carrier.

MAP

Missed Approach Point

Marker Beacons

75 MHz beacons used as part of an Instrument Landing System. These beacons transmit vertical signals, defining points along the glideslope:

MDA

Minimum Descent Altitude

METAR

A coded aerodrome Meteorological report.

Middle Marker (MM)

Situated at a point at or near Decision Height

Morse code idents

Morse code identifiers transmitted by NDB and VOR navaids, used for Identification purposes. The Morse identifier is typically printed on aeronautical charts.

MSA

Acronym for Minimum Safe Altitude

MSL

Acronym for Mean Sea Level

Multicom

Two-way radio frequencies established by the Federal Communication Commission for use in aviation

NDB

Acronym for Non-Directional Beacon. A navigational aid that transmits a non-directional signal, superimposed with a Morse code identifier. This signal is received with the ADF radio.

OBS

Acronym for OmniBearing Selector

May 31 – June 8 1928

First U.S.–Australia flight.

Two Australians (Sir Charles Kingsford-Smith and Captain Charles T. P. Ulm) and two American navigators (Harry W. Lyon and James Warner) crossed the Pacific from Oakland to Brisbane in a trimotor Fokker, including stops in Hawaii and the Fiji Islands.

July 15-22 1933 First round-the-world solo

Wiley Post flew a Lockheed Vega, *Winnie Mae*, around the world in a little over 186 hours, covering 15,596 miles.

July 4, 1937 First successful helicopter flight

German pilot Hanna Reitsch (also the first woman civil and military aviation test pilot) flew Dr. Heinrich Focke's FW-61 in free, fully controlled flight at Bremen.

July 15-31, 1952 First transatlantic helicopter flight

Captain Vincent H. McGovern and First Lt. Harold W. Moore piloted two Sikorsky H-19s from Westover, MA, to Prestwick, Scotland (distance of 3,410 miles). The distance required the trip to be made in five steps and required a flying time of 42 hours, 25 minutes.

June 12, 1979 First man-powered aircraft to fly across the English Channel

Bryan Allen won the Kremer Prize for flying the *Gossamer Albatross* as the first man-powered aircraft to across the English Channel. He flew from Folkestone, England, to Cap Gris-Nez, France, in just under three hours.

July 7, 1980 First solar-powered aircraft to fly across the English Channel

Stephen R. Ptacek flew the 210 pound *Solar Challenger* at an average speed of 30 mph from Cormeilles-en-Vexin near Paris to the Royal Manston Air Force Base in England. The trip required five and half hours.

July 2-4, 1987 First transatlantic hot-air balloon flight

Richard Branson and Per Lindstrand flew 2,789.6 miles from Sugarloaf Mountain, Maine to Ireland in their hot-air balloon called the *Virgin Atlantic Flyer*.

Outer Marker (OM)

Situated at or near the glideslope intercept point

Panel Eyebrow

Aviation term for the top of the instrument panel. Like the top of your dashboard.

PFD

Acronym for Primary Flight Display on an aircraft instrument panel (artificial horizon, HIS, etc.).

POH

Pilot's Operating Handbook, or aircraft "owner's manual"

Procedure turn

Maneuver that reverses the direction of an aircraft during an Instrument Approach Procedure, to enable it to intercept the final approach course.

QFE

Height above the airfield

QNH

Altitude above sea level

Rate 1 turn

Aircraft turn of 3 degrees per second

RMI

Acronym for Radio Magnetic Indicator

RVR

Acronym for Runway Visual Range

SID

Acronym for Standard Instrument Departure

Stall

Minimum speed at which the airframe produces lift, with flaps retracted

Standard rate turn

A 2-minute turn, as indicated on your Turn Coordinator gauge.

STAR

Standard Terminal Arrival Route for IFR arrivals

TAS

True Airspeed. Rectified airspeed corrected for altitude and outside air temperature.

TCA

Terminal Control Area (USA).

Unicom

Privately operated radio advisory service at uncontrolled airfields

VFR

Acronym for Visual Flight Rules. Prescribed for the operation of aircraft in visual meteorological conditions. (VMC). VMC is generally defined as five miles visibility or more and 1,000 feet

vertical and one nautical mile horizontal clearance from cloud, but variations apply to aircraft operating below 3,000 feet above sea level.

VMC

Acronym for Visual Meteorological Conditions. Generally defined as three miles visibility or more, 1,000 feet vertical, and one nautical mile horizontal clearance from clouds. Variations apply to aircraft operating below 3,000 feet above sea level.

VOR

Acronym for Very high frequency Omni-directional Range. A VOR ground station transmits a two-phase directional signal through 360°. The aircraft's VOR receiver enables a pilot to identify his radial or bearing from/to the ground station.

VSO

Stall speed in landing configuration

V-speeds

Designations for certain velocities relating to aircraft operation:

V1 - decision speed, up to which it should be possible to abort a take-off and stop safely within the remaining runway length. After reaching V1 the take-off must be continued.

Va - design maneuvering speed. The speed below which abrupt and extreme control movements are possible (though not advised) without exceeding the airframe's limiting load factors.

Vfe - maximum flap extension speed (top of white arc on ASI).

Vmca - minimum control speed (air). The minimum speed at which control of a twin-engined aircraft can be maintained after failure of one engine.

Vne - never-exceed speed, "redline speed" denoted by a red radial on an ASI.

Vmo - maximum operating speed. Also Mmo, Mach limit maximum operating speed. Vno - normal operating speed. The maximum structural cruising speed allowable for normal operating conditions (top of green arc on ASI).

Vr - rotation speed, at which to raise the nose for take-off.

Vso - stalling speed at MTWA, in landing configuration with flaps and landing gear down, at sea level.

Vx - best angle of climb speed on all engines.

Vxse - best engine-out angle of climb speed.

Vy - best rate of climb speed on all engines.

Vyse - best engine-out rate of climb speed, "blue line speed" (blue radial on ASIs of light twins)

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During World War II, the Catalina served as an intelligence-gathering aircraft. But it also served in search and rescue missions and performed small bombing raids as well. The *Legends of Aviation Series* pays tribute to these monuments of aviation with four authentic versions of this impressive aircraft: a land-based civilian model, a water-based civilian model as well as both a land and sea version of the military Catalina.

The Princess is visually breathtaking. The developers mastered special techniques such as shining landing lights, silky-smooth landing gear motion, working wipers and fully-functional custom instrumentation!

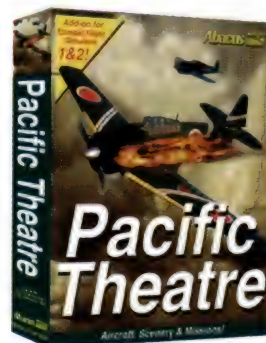
1-55755-441-2

\$29.95

Pacific Theatre add-on brings you twelve of the most famous U.S. and Japanese planes that saw battle in the Pacific. These authentic planes were created especially for CFS by designers Terry Hill and Dennis Wasnich.

Pacific Theatre add-on brings you the Hawaiian Islands where the war in the Pacific first started- Pearl Harbor. The missions and battle scenes have been laid out according to historical records such as these.

An add-on package for Combat Flight Simulator wouldn't be complete without missions. The *Pacific Theatre* missions were created based on actual events at Pearl Harbor in 1941.



1-55755-447-1

\$29.95



Battle for Midway features ten of the most famous U.S. and Japanese planes used in the Midway and Coral Sea areas, as well as two bonus planes- the twin-tailed P-28 Lightning and J7W Shinden "pusher." The *Battle for Midway* missions based on actual events of the Coral Sea and Midway Islands in 1942.

You'll fly in the uncharted skies to face a relentless enemy. The exploding "mission objects" are finely crafted 3-D enhancements that behave as you'd expect them to in combat, exploding when hit with artillery fire!

1-55755-445-5

\$29.95



Abacus has several best-selling add-ons for Microsoft Combat Flight Simulator, which shows our commitment to this popular and flexible platform. The aircraft in *Pacific Theatre*, *Battle for Midway*, *Wings Over China* and *Tuskegee Fighters* are among the most famous of World War II.

We've taken the best of these warbirds, all crafted by noted designer Terry Hill and put them into *Combat Squadron*, which will give you 18 great planes for CFS2, CFS 1 and FS2000!

1-55755-440-4

\$29.95

Web Watch

Welcome to another flight aboard *Flight Simulator World WebWatch*. Today our journey will take us to a variety of sites.

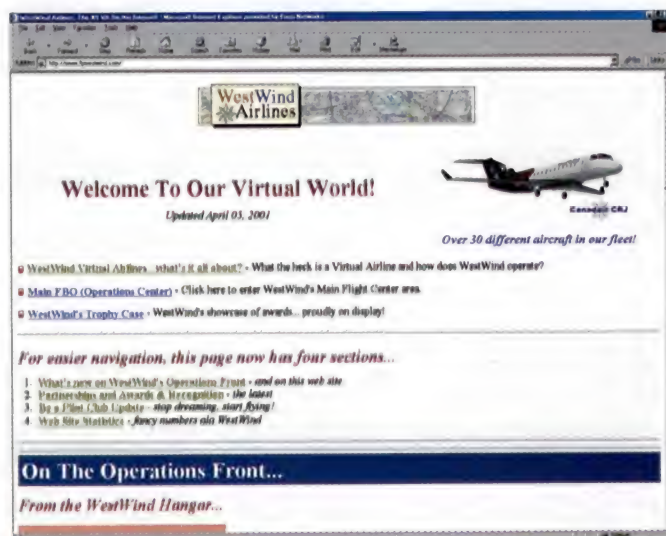
Adam Howe

Today our journey will focus on Virtual Airlines. What is a Virtual Airline you ask? A Virtual Airline is much like a real airline (Northwest, American, United and so on) except that it is all done on the computer. Your job as the pilot is to fly the route given to you by the Virtual Airline. Virtual Airlines often have aircraft that you can download from their site which are to be used when flying your assigned trip. This may sound like a lot of fun, but remember there are hundreds of Virtual Passengers aboard whose lives are in your hands!

The only requirements for joining a Virtual Airline are a version of Microsoft's Flight Simulator supported by the Virtual Airline you sign up with, a love for flying and some free time to fly your route.

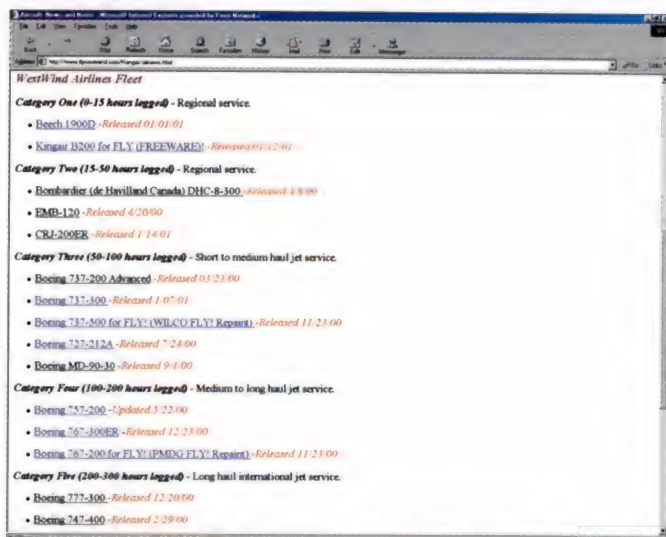
WestWind Airlines

Our first stop on your Virtual Airline tour will bring us to WestWind Airlines at <http://www.flywestwind.com/>. WestWind Airlines was mentioned in the August 1998 issue of Full Throttle magazine (now Flight Simulator World magazine).

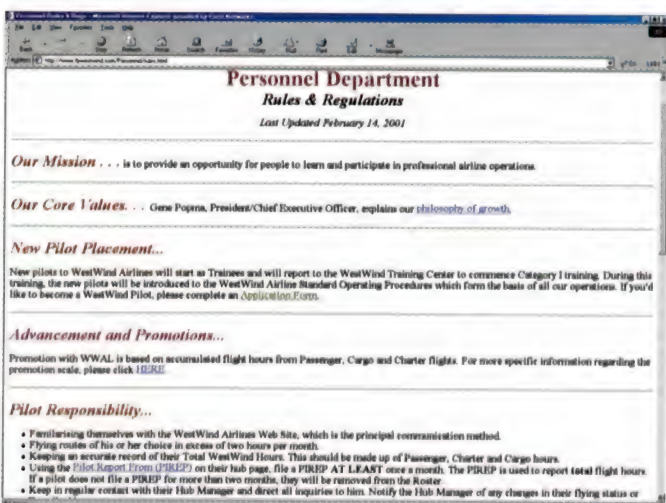
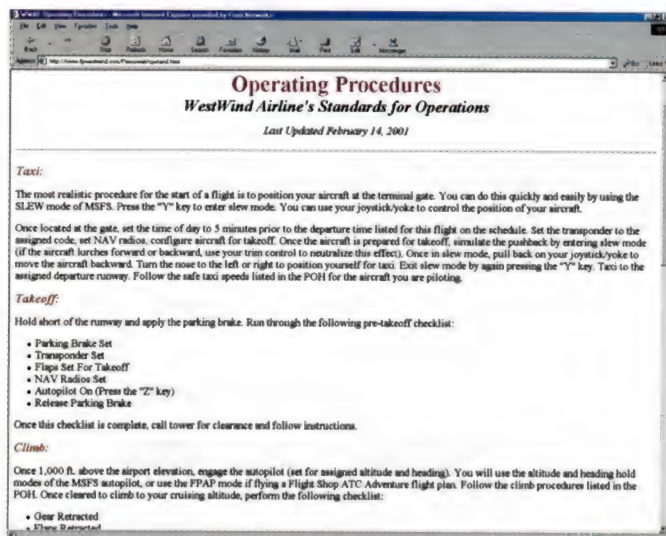


WestWind Airlines boasts a large fleet of aircraft that you can download and add to your Flight Sim. Most of the planes available are for Flight Sim 2000 but some FS98 planes are still available.

Internet Sites for Simmers

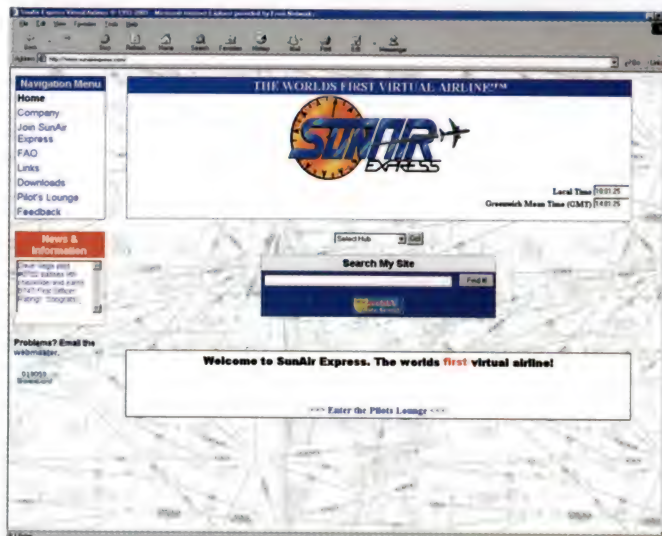


As with any real airline, you must follow certain rules. In the case of a Virtual Airline, this is to assure realism. WestWind airlines comes with a set of Operating Procedures and Rule and Regulations that you are supposed to follow.



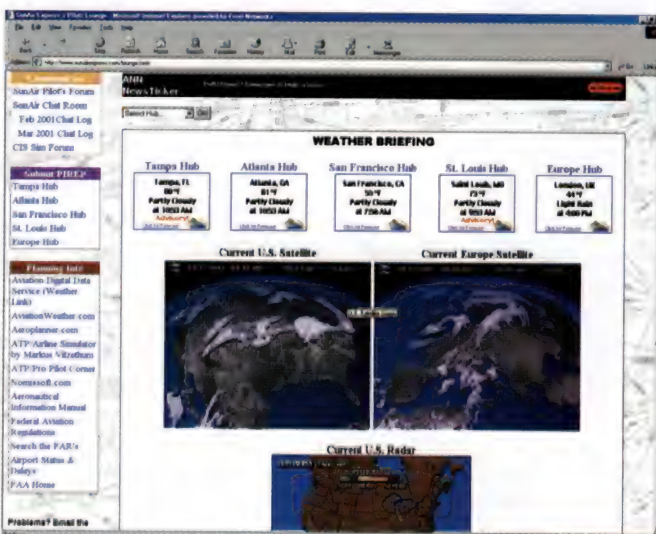
SunAir Express

Our next stop will bring us to another Virtual Airline called SunAir Express at <http://www.sunairexpress.com/>. This airline was founded in 1992 claims to be the first Virtual Airline ever and I have not found any evidence to dispute this claim.



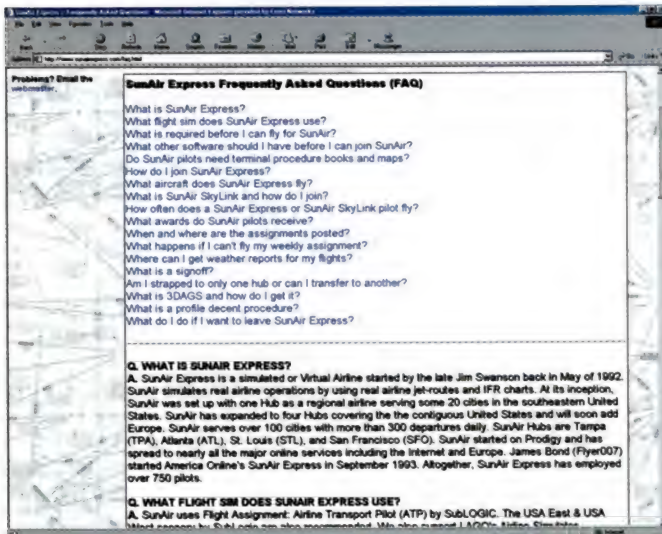
From the home page, you can click to get more information on SunAir Express, join SunAir Express, read their FAQ's, check out their Links, visit the Pilot's Lounge and go to the Downloads page. The downloads are password protected so only members have access.

Clicking on the Pilot's Lounge will bring to the heart of the website. Here you will see current satellite maps of the U.S. and Europe and a Doppler Radar map of the U.S. Also on this page you can access FAA Regulations, Aviation Digital Data Service, Aeronautical Information Manual and more.



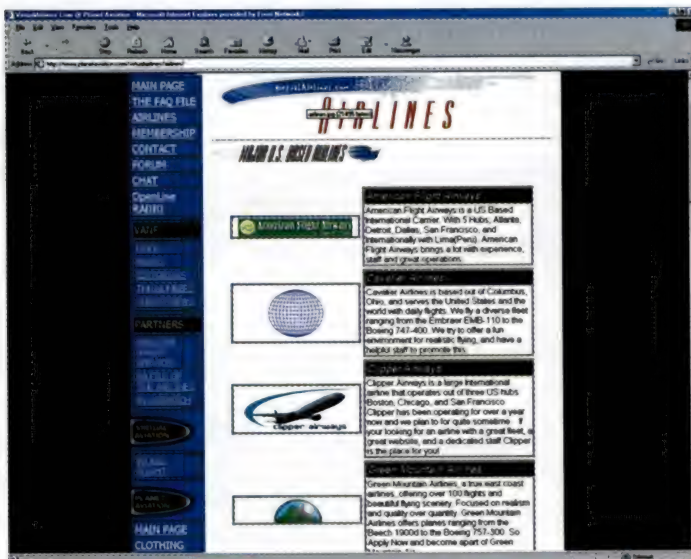
WEBWATCH

The FAQ link will give about 18 commonly asked questions ranging from "What is SunAir Express" and "How do I join..." to "What aircraft does SunAir Express fly" and "What is a profile decent procedure."



VirtualAirlines.com

Our last official stop on our journey brings us to VirtualAirlines.com at <http://www.planetaviation.com/virtualairlines/>, a portion of Planetaviation.com. VirtualAirlines.com is host to many different Virtual Airlines including American Flight, Cavalier, Clipper, Green Mountain, Canada Virtual, Dove Wings, Tiger Air Canada and many more.



Visit the Openline Radio link to listen to live broadcasts or pre-recorded broadcasts. You will have to have RealPlayer installed to hear the broadcasts.

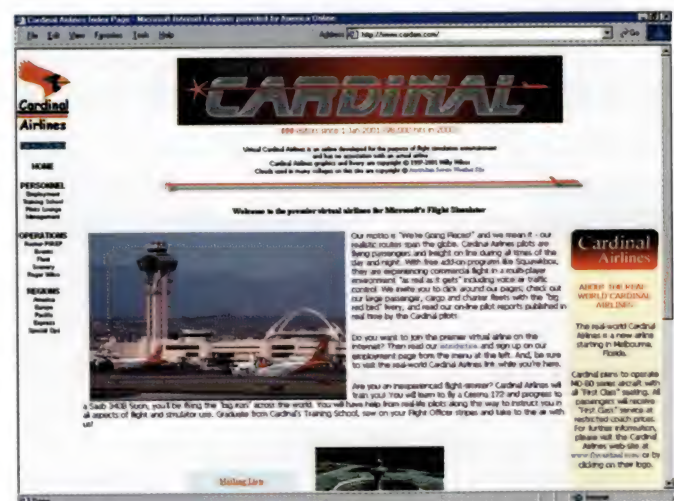
On any screen of VirtualAirlines.com, you can visit any of the following: The FAQ File, Airlines, Membership, Contact, Forum, Chat, Openline Radio, Newsletter, and numerous government links including the Army, Navy, Marines, FAA and NASA.

Other Virtual Airlines

The Virtual Airlines listed in this article represent only a few of the hundreds available. If you are looking to start a Virtual Airline of your own to get more information on Virtual Airlines in general, I recommend stopping by any of the sites to see what's available. Each site will give you information on how to join and what is required. Here are a few other Virtual Airline sites that you may find of interest:

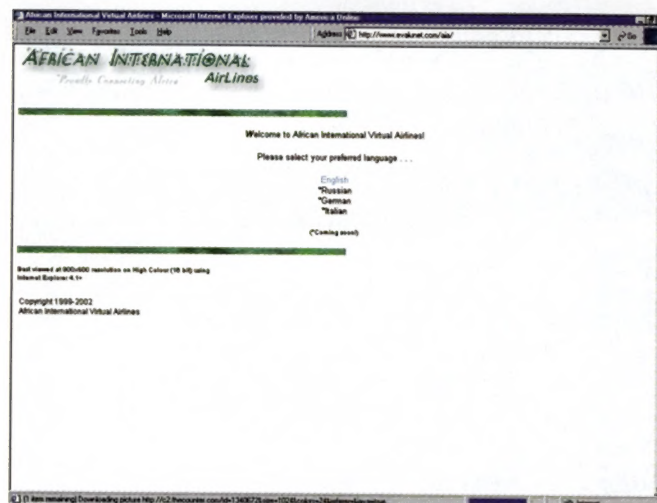


<http://www.peggware.com/airpacificaf/>





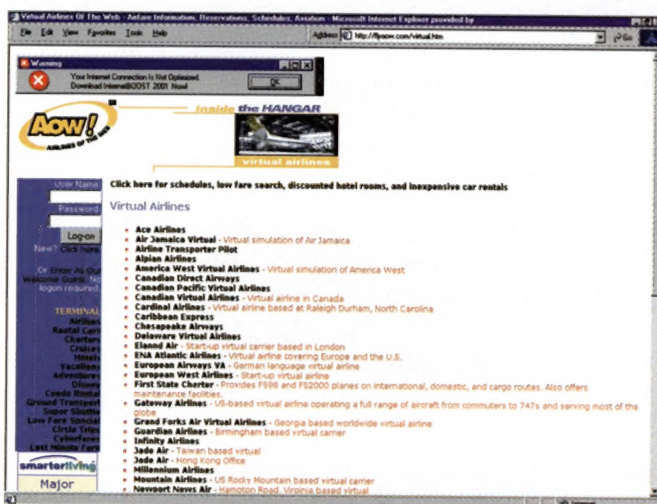
<http://www.flyairwest.com/>



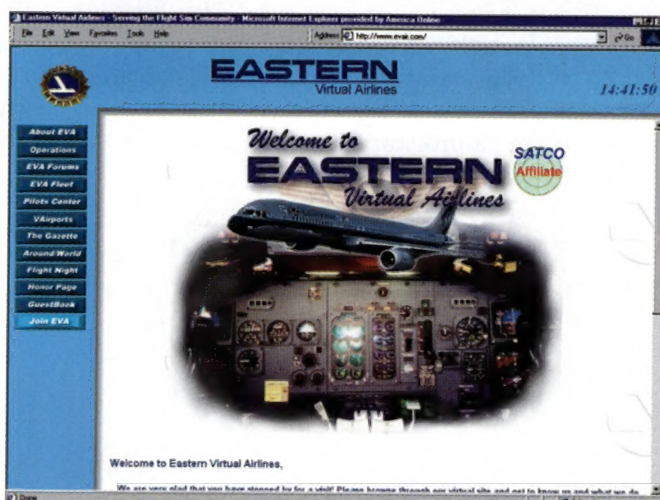
<http://www.evalunet.com/aia/>



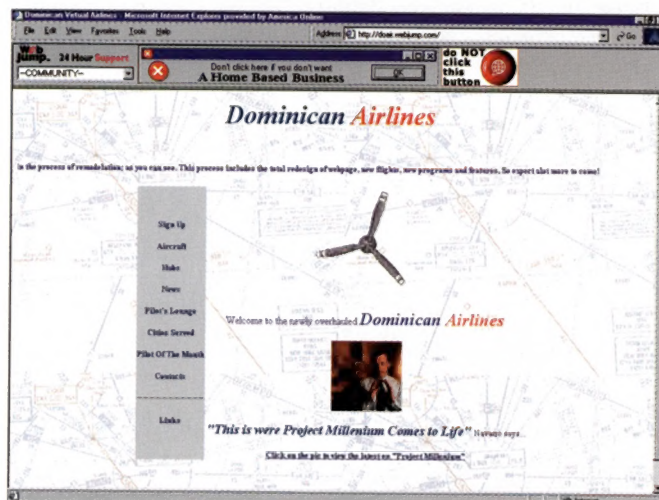
<http://www.aua.com/virtual/>



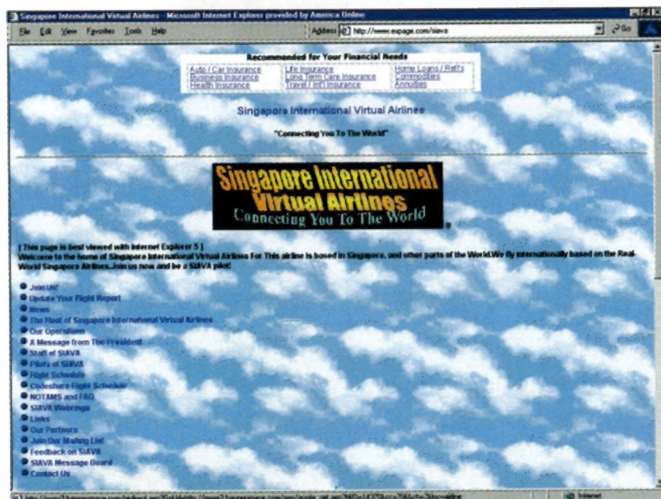
<http://flyaow.com/virtual.htm>



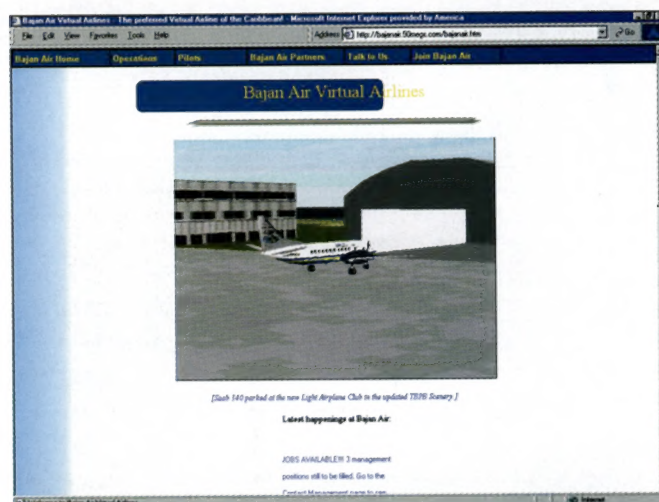
<http://www.evair.com/>



<http://doair.webjump.com/>



<http://www.expage.com/siava>



http://bajanair.50megs.com/bajan_air.htm



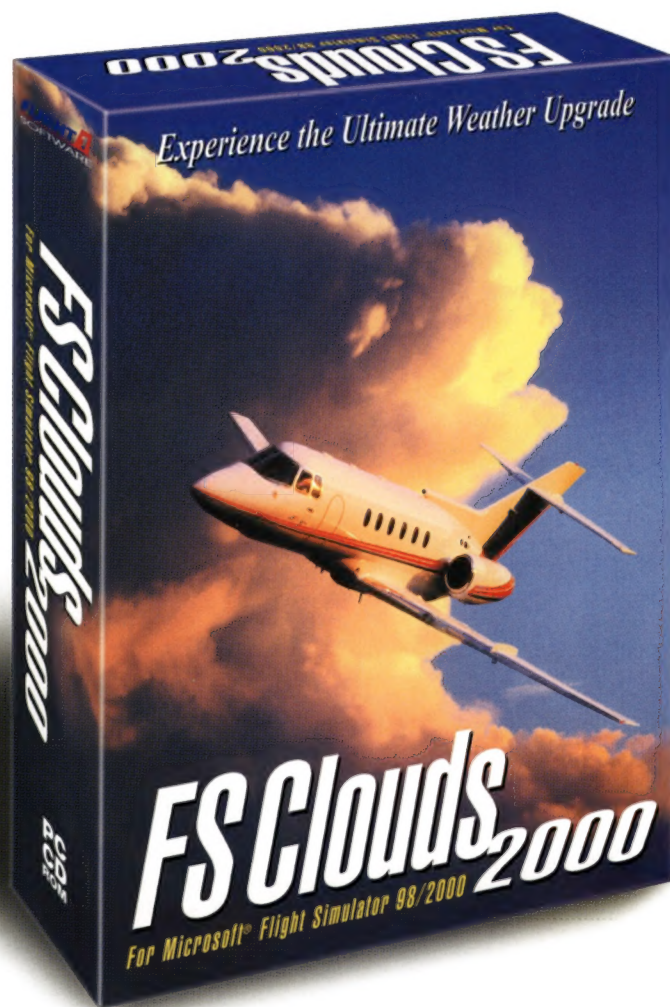
<http://www.nymetroair.com/>



<http://www.allineed.is/icelandairva/>

As always, I hope you have enjoyed your tour of the Virtual Airlines. If you have an aviation or FS related website that you run or are starting, or if you have a favorite site that has not been mentioned in WebWatch, please send me a link and the reason you like the site to adam@flightsimulatorworld.com.

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CH GC3 Gamecard	\$34.95
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747-400 PROFESSN'L

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5 axis of control including, pitch, roll, throttle lever, propeller lever, and mixture lever.
19 button functions including, gear switch, flap switch, 8-way hat switch, two 2-way rocker switches, and 4 push buttons.
Software Programmable - Easy setup with Win98 GUI or Mac OS Control Panel.
Precision trim controls for precise electronic centering.
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FLIGHT SIM YOKE USB

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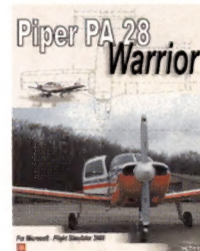
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